2 Approaches To Selling Home Cooling... *Pp. 12, 20*

AIR CONDITIONING HEATING & REFRIGERATION NEWS

The Newspaper of the Industry

RESIDENTIAL — COMMERCIAL — INDUSTRIAL

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Buensod-Stacey, Aeronca Merge

MIDDLETOWN, Ohio—At a special meeting, stockholders of Buensod-Stacey, Inc., New York City, and Aeronca Mfg. Corp. here voted to merge the two companies.

Buensod-Stacey, a pioneer in the development of high velocity air conditioning equipment, will be operated as a wholly-owned subsidiary of Aeronca. Milton S. Smith will continue as Buensod president and has been elected vice president and a director of Aeronca.

Buensod's sales last year totaled more than $7 million. Stockholders were told that the firm entered 1960 with a backlog of $9,185,000 of orders and booked more than $1 million of orders in January for the largest backlog in its history. Sales this year are expected to reach

(Continued on Page 4, Col. 5)

Air Conditioning Goes To the 'Poor House'

BIRMINGHAM, Ala. — Air conditioning has now been extended to the "Poor House."

The Jefferson County Commission here has awarded a $36,449 contract to Mann Construction Co. to air condition the County Home at Ketona. This is a home for indigents.

Air Force Plan To Upgrade Engineers Could Benefit Entire Profession

By C. Dale Mericle

WASHINGTON, D. C.— Haunted by the fear of being relegated to the role of mere "craftsmen with skills in putting lines on paper and applying concepts and formulas furnished by others," engineers of the U. S. Air Force have launched an upgrading program that could well have a profound effect on the entire engineering profession.

Key figure in this bootstrap operation is Major General A. M. Minton, director of civil engineering for the Air Force, whose responsibilities include, among others, air conditioning, heating, and refrigeration at Air Force installations throughout the world.

The quotation in the first paragraph, in fact, came from a talk given by Gen. Minton before the recent winter meeting of the National Society of Professional Engineers.

While the word "upgrading" is a broad term and often rather nebulous in nature, the Air Force engineers have some very specific and concrete ideas as to what it means in this connection.

First, every engineer in the Air Force is being urged and encouraged to seek and obtain professional registration. This applies to both military and civilian employes.

Second, every engineer in the Air Force is being urged and encouraged to join and actively participate in national engineering societies.

(Architects and real estate specialists in the Directorate of Civil Engineering are being encouraged to register and parti-

(Continued on Page 24, Col. 1)

NEMA Estimates Jan. Room Unit Sales at 67,200

NEW YORK CITY—The National Electrical Manufacturers Association has issued its first monthly statistical press release on room air conditioner sales.

NEMA estimates that total industry sales by manufacturers of room air conditioners in January amounted to 67,200 units. No comparative figure was given.

The association also estimated that total industry sales of household refrigerators in January rose to 266,700 from 256,200 a year ago. However, January sales of farm and home freezers declined to 53,200 from 78,800 in the same month of 1959.

The figures are based on expansion of data reported to the NEMA Etatistical Dept. to cover total industry sales including exports.

Union Rejects Carrier's Secret Ballot Proposal

SYRACUSE, N. Y., March 17—Production operations continued to be shut down at Carrier Corp.'s plant here by striking members of the United Steel Workers Union, as the union rejected a company proposal to take a secret ballot vote among workers on the issue of whether or not they wanted to come back to work while contract negotiations were carried on.

The walkout on March 2 came about because of disciplinary action taken against some officers of the local union.

Carrier filed charges with the Buffalo office of NLRB charging unfair practices in the strike by Local 5895, USW. It was alleged that pickets attempted to stop railroad companies from

(Continued on Back Page, Col. 1)

'59 Unitary Air Conditioner Sales Rose 49% over '58

* * *

WASHINGTON, D. C.— Manufacturers' shipments of unitary air conditioners reported to Air-Conditioning & Refrigeration Institute for the year 1959 totaled 285,935 units, excluding coils, a gain of 49% over figures recorded by ARI for 1958, the association reports.

It is estimated that the units reported to ARI represent more than 85% of the industry total. The figures include unitary heat pumps, but do not include room air conditioners, reversible or otherwise.

Heat pump shipments showed the largest increase of all unitary types in 1959, according to ARI.

The institute's figures show a total of 35,167 units, a gain of 94% over the 1958 total. Of the heat pumps shipped, more than 65% were self-contained.

A summary of the shipments by types and sizes (capacity), appears on back page of this issue.

ARI Standard Covers Sealed Compressors, Condensing Units

WASHINGTON, D. C. — A new ARI standard for "Sealed Refrigerant Compressors and Condensing Units, 20 Horsepower and Smaller" has been published by the Air-Conditioning & Refrigeration Institute, it was announced by Frederick J. Reed, ARI chief engineer.

The standard, numbered ARI Standard 515-60, replaces ARI Standard 320-56, for "Sealed (Hermetic-Type) Refrigerating Condensing Units, Five Horsepower and Smaller, for Commercial Application," which will be withdrawn from circulation.

Under its declaration of "purpose," the new standard states:

"The purpose of this standard is to establish, for sealed refrigerant compressors and condensing units, recommended specifications of what constitutes standard equipment; recommended minimum net volumes of liquid receivers; recommended minimum tube-connection sizes for liquid-line and suction-line shutoff valves; recommended requirements for testing and rating, including Standard Rating Conditions; recommended minimum performance requirements; provisions for safety; and recommended installation and service instructions."

Covered under the document, which is intended for the guidance of the industry, including manufacturers, distributors, installers, contractors, and users, are sealed electric-motor driven refrigerant compressors, as well as air-cooled evaporatively-

(Continued on Page 4, Col. 4)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Shattering Experience
Do You Remember?
Story of the Week
Keep an Eye on This Lad
Fraternity Men,
Please Note

Shattering Experience

Three days after dynamic Ed Henderson hired a new secretary she appeared suddenly in our office.

"Mr. Taubeneck," she ventured, "does the name Judy Baker mean anything to you?"

"Sure does," we quick-triggered. "She was my girlfriend, until some impulsive character up and married her, right underneath my nose. Wonderful girl. Do you know her?"

"Yes. I know her. She's my mother."

We don't recommend this boinngg-into-a-wheelchair experience to anybody.

Do You Remember?

After you pass your 50th birthday, you *should* realize that there's less life ahead of you than behind. But that realization arrives as a shock.

You just don't want to go. The hell with "taking it with you." You want to linger longer.

However, there's fun in reminiscing. Examples: the open touring car, the Stutz Bearcat, Packard Twin Six, Pierce-Arrow . . . Babe Ruth, Red Grange, Jack Dempsey . . . Hoobert Heever . . . Wilson's 14 Points . . . what happened to Judge Crater, and who pulled the plug on Warren Harding?

Will Rogers . . . Cal Coolidge's unconscious wit (he didn't mean to be funny, but he was) . . . Rumble seats. Hand-painted slickers. Pocket flasks. Peepholes in the door through which you took customers.

Billy Sunday, Aimee Semple MacPherson, Joe DiMaggio, Knute Rockne, Bob Zuppke, and One-Eye Connolly. Radio crystal sets. The Yellow Peril.

Likewise, outdoor privies equipped with "Monkey Ward" catalogs on a hook. If you didn't get through the Harness Section by July, father brought home a pound of Epsom Salts.

Once upon a time "Life" and "Judge" were funny magazines. And "College Humor" was in that game, too.

(Continued on Page 8, Col. 1)

Hussmann Elevates Caulk to Presidency

ST. LOUIS—At the board of directors' meeting of Hussmann Refrigerator Co. held recently, John R. Caulk, Jr. was elevated from executive vice president to president of the company.

J. R. Caulk, Jr.

W. B. McMillan, who has been president, was re-elected as chairman of the board and chief executive officer of the company.

Other officers re-elected are W. A. Vormehr, Jr., A. B. Biddle, and A. P. Viragh, vice

(Continued on Page 4, Col. 5)

Distributor Sales Pace Slows In Jan.

WASHINGTON, D. C.—According to the monthly wholesale trade report issued by the Census Bureau, sales of air conditioning and commercial refrigeration equipment distributors in January were off an average of 1% compared with a year earlier and down 10% from December.

The distributors' inventories at the end of January rose 6% from Jan. 31, 1959, and declined 5% from the end of December.

The Census Bureau also reported that January sales of plumbing and heating equipment and supplies distributors were 7% higher than a year ago but 10% below December. Their end-of-January inventories increased 9% from a year earlier and 1% from a month earlier.

Revco Forms Heat Pump Div. To Sell Expanded Air Conditioning Lines

DEERFIELD, Mich.—Howard D. White, president, Revco, Inc., announced the formation of a new Heat Pump Div. to market an expanded line of Revco heat pumps and air conditioning equipment.

The new division will manufacture, sell, and service these units under the names "Revco Reversamatic Heat Pumps" and "Revco Air-Cooled Air Conditioners." Both split systems and packaged units are offered.

The present line of Revco heat pumps is air cooled. It consists of 2½, 3, 4, and 5-hp. remote condensing units with air handlers, and self-contained heat pumps 2 through 5 hp., all with supplementary heat packages.

Also available are air-cooled remote condensing units with matching coils and blower combinations and self-contained package units 2 through 5 hp.

The division activities are under the direction of E. J. Burnett, product manager. Previous to this assignment he served as director of quality control and production manager.

J. H. Hinckley has recently joined the Heat Pump Div. staff as a sales engineer.

York Promotes Dart

YORK, Pa.—W. Gene Dart has been promoted from senior product design engineer to merchandise manager for residential heating and air conditioning products by the York Div. of Borg-Warner Corp.

McNeil Moves To Buy F. E. Myers & Bros. Co.

CLEVELAND—Stockholders of McNeil Machine & Engineering Co., Akron, Ohio, are scheduled to vote about May 1 on a plan for acquiring F. E. Myers & Bros. Co. of Ashland, Ohio, it was reported here. Price is said to be about $12,000,000.

A 90-year-old firm, Myers makes water pumps and power spraying and water conditioning equipment. It has two plants in Ashland and a subsidiary—Southwest Mfg. Co.—in Aurora, Mo., which manufactures heating and air conditioning equipment.

The acquisition plan already has been approved by the directors of McNeil and Myers. McNeil would pay $60 a share for Myers' outstanding common stock and assume all liabilities except costs of the sale.

$1 Million Contract Let To Cool L. A. Post Office Annex

LOS ANGELES — Western Air & Refrigeration, Inc. announces that it has received what it believes is probably the largest single contract for air conditioning ever written in the West.

The contract in the amount of $998,139 is for air conditioning the Los Angeles Terminal Annex Post Office.

"This facility which embraces Zone 54, the mailing address of the principal companies in the area, is the so-called 'working post office' for the metropolitan area," the company pointed out. "It handles all mail via rail and air carriers. It is one of the first facilities having helicopter service to and from the airport and outlying communities for air mail."

The installation includes two centrifugal compressors, each of 750-ton capacity. They will be furnished by The Trane Co. The fans and coils will be supplied by Utility Fan Co. of Los Angeles and Dunham-Bush, Inc. of Riverside, Calif.

It is anticipated that 5,000 man days of labor will go into the job which is to be completed by Aug. 1, 1960.

A combination of both steel and aluminum ducts are to be installed, steel being used on systems which are of very large capacity and aluminum on the smaller systems, it was explained.

Plans and specifications were prepared by Ralph E. Phillips, consulting engineer of Los Angeles, under contract with the General Services Administration.

Events Planned For Oil Heat Diamond Jubilee

NEW YORK CITY — Events to celebrate the Oil Heat Diamond Jubilee are being planned for the entire year of 1960.

According to Everett Elliott, Danvers, Mass., Diamond Jubilee Chairman of the Oil Heat Institute of America, "the celebration has captured the imagination of so many in the oil heat industry, and tie-in activities are being planned by so many manufacturers, jobbers, heating oil distributors and dealers and individual chapters, it will take a full year to stage all the planned events.

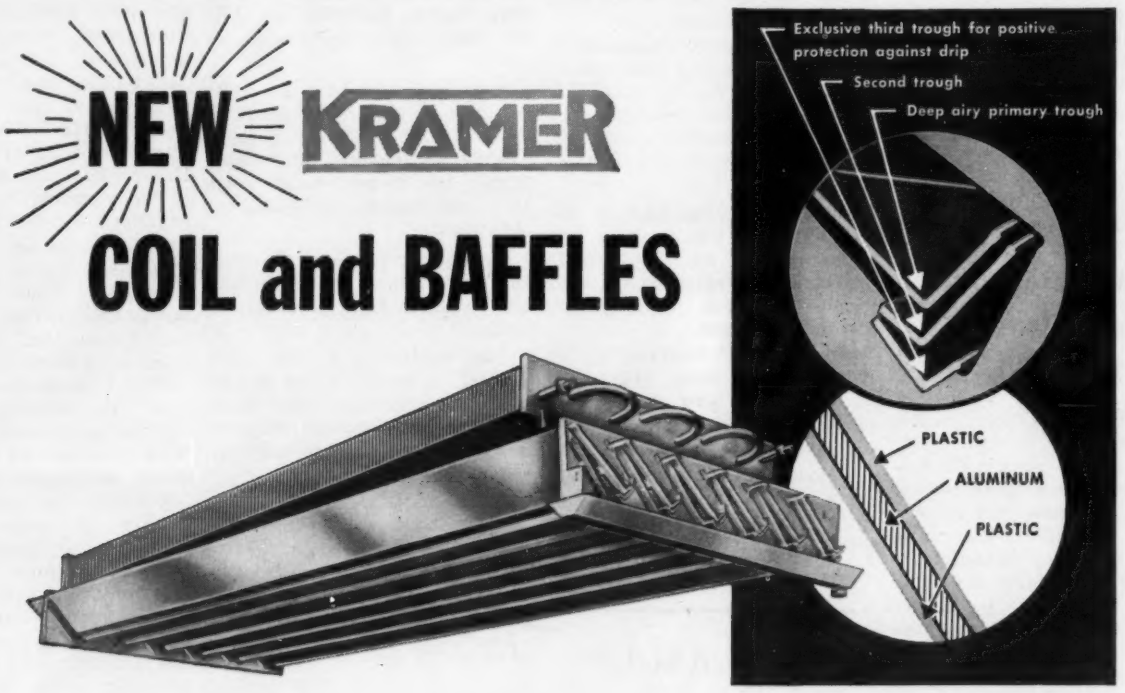
"The Diamond Jubilee provides a rare opportunity to focus trade and public attention on the past achievements, the present progress and 'The Diamond Bright Future of Oil Heat.'"

Learning To Manage

SYRACUSE, N. Y.—A six-week training course in business management fundamentals, sponsored by the Refrigeration Service Engineers Society, is under way here, with refrigeration service people from the central New York area attending.

NEW KRAMER

COIL and BAFFLES



with attractive lifetime
PLASTIC CLAD ALUMINUM
at no extra cost!

Permanently Attractive Baffle—Constructed of a new plastic-clad aluminum which combines the strength and flexibility of aluminum with corrosion-resistant plastic for lifetime beauty. It will not chip, peel, corrode, sag, fade nor get brittle. It is absolutely odorless and sanitary. The coil with its colorful baffle will retain its attractive appearance for the life of the cooler.

Dripless Triple-Trough Design—The triple-trough—a unique Kramer feature—provides a deeper primary trough for unrestricted draftless circulation of cool air. The narrow third trough reduces dripping to a minimum, making the Kramer triple-trough baffle virtually drip-proof.

Easy to Install—Kramer coil and baffle combinations are completely assembled at the factory. Shipped in closed wooden cases, they arrive on the job clean and ready for installation, saving assembly and installation time.

Immediate Shipment—A complete range of 15 carefully selected sizes giving maximum Btu per dollar for every application are carried in stock for immediate shipment. Both left-hand and right-hand baffles are available.

WRITE FOR BULLETIN CBC-276C

KRAMER TRENTON CO. • Trenton 5, N.J.

44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Noland Co. Broadcasts Annual Meeting Over Closed Circuit to 31 Branches

NEWPORT NEWS, Va. — Noland Co., Inc. recently staged an annual meeting that brought together through a 1½-hour closed circuit radio broadcast its 1,270 employes in 31 cities in nine southeastern states.

The company is a distributor of air conditioning, refrigeration, heating, industrial, electrical, and plumbing equipment.

The 37th annual meeting of Noland employes was coordinated in each location by branch managers who tied in with recordings, movies, and other visual materials, based one a script longer than that of "Gone With the Wind."

It took a script an inch thick just to give signals and instructions to the branch offices.

"Noland employes were confidentially given the operational and financial information normally reserved only for a corporation's board of directors," the company pointed out. "And significantly, employes were given checks under the company's extra compensation plan, based on the year's earnings."

Reviewing the company's history during the past decade, Chairman Lloyd U. Noland, Jr. told employes and their wives that the company's sales in the fifties had more than doubled those of the forties.

"The net worth of our company increased more than 64% in the past 10 years," said Noland. He reported that employe salaries, wages, and incentive payments, which totaled more than $59,000,000 in the fifties, represented an increase of 121% over the previous decade.

Noland's talk originated from the Virginia Room of the Hotel Chamberlin in Old Point Comfort, Ft. Monroe, Va. President John E. Sommers also addressed employes and their wives at individual dinners held in each of the locations in which the company has branch offices.

A new marketing program in which all Noland customers can benefit was initiated.

From Memphis to Charleston, from Tampa to Hagerstown, Noland managers held "buzz sessions," analyzing the year's achievements which were translated into dollar and cents by a careful breakdown of the Noland sales dollar, it was noted.

A 53-minute sound film, shown simultaneously at each branch office, explained a new plan of management organization developed to provide for the company's continuing growth under new and changing times and business conditions.

The company's new marketing concept was presented in a 20-minute cartoon film, which will be taken into the field later for showing before Noland trade groups.

78 Cooling Consoles To Missile Facility Is Big Order for D-H

SAN FRANCISCO — E. C. Cooley Co. here, air conditioning manufacturer Drayer-Hanson's sales agent in northern California, wound up 1959 with a major contract from installer Monterey Mechanical Co. to furnish the guided missile facility near here with 78 separate units of D-H console-type air conditioning equipment.

According to Drayer's sales manager, Irvin Secord, the king-sized order will constitute the largest single unitary order ever furnished by his firm to U. S. government facilities in the Far West.

REPRINTS
SELLING FOR PROFIT.
By Frank Klein—Only $1.00 ea. Clip this ad and mail with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Seek Responsibility Limit for Contractors

WASHINGTON, D. C.—The American Institute of Architects has informed the National Association of Plumbing Contractors' Washington staff members that its joint committee with the Associated General Contractors has agreed to recommend to the AIA board of directors that the wording of Article 20 of the General Conditions be revised again so as to include a limitation of responsibility.

Previously, the NAPC said, the AIA revised Article 20 and eliminated from its wording the one-year limitation of responsibility and extended it to equal that of the local and state law.

"Considerable confusion resulted in that excessively long guarantees seemed to be implied," the NAPC stated.

Tests New Heat Pump

LOS ANGELES—Prototypes of its heat pump have been developed by Thermador Div. of Norris-Thermador Corp. and are now being tested, William E. Cranston, division president, told the Los Angeles Society of Security Analysts at a recent meeting.

Cranston said the reverse-cycle air conditioning-heating units are designed for installation in homes and offices and are estimated to retail at about $900 each.

Air Force Ups Smith

WASHINGTON, D. C. — William T. Smith's promotion to Chief, Utilities Engineering Section, Directorate of Civil Engineering, has been announced by Headquarters, United States Air Force.

Jamaica Calls Hotpoint Dealers

CHICAGO — "Millionaire's Vacation" is the name of a new dealer trip being offered Hotpoint appliance dealers for sales of room air conditioners.

Jamaica is the scene Hotpoint dealers and wives can enjoy for a full week.

To help dealers take advantage of winning a trip or trips, Hotpoint has prepared a series of sales aids; a multiple unit to display one, two, three, or six air conditioners; special display for 12 different advertising mats which merchandise the features of Hotpoint's 1960 air conditioner line; and a new full line folder for special mailings to "hot" prospects.

Other aids include six demonstration ideas, a publicity release for local newspaper use, and radio spot announcements.

In celebration of our 60th year of world-wide progress . . .

A Genuine Coleman
gas-lite
Yours to give now as a "buyer's bonus" when you install
Coleman
America's Only Bonded Line Heating and Air Conditioning

This new Coleman Gas-Lite is the key to the most complete and most exciting business-building program ever offered through heating and air conditioning dealers. Most complete because it includes every imaginable aid to selling. Most exciting because it gets an enthusiastic response from everyone in the market for heating or air conditioning.

Here's the plan. As an anniversary salute, we're making it possible for you to offer a genuine Coleman Gas-Lite to your customer with the installation of any Coleman central furnace, wall heater, floor furnace or air conditioner. It's an offer your prospects will go for when you give them the lamp as a bonus for buying now! For more information, use the coupon below or call your Coleman distributor for your complete program kit containing full details—*right away!*

Best selling tool of all—you offer this exclusive $500 bond with every unit you sell

Coleman's Gas-Lite promotion will be announced to home owners in the March 26 Saturday Evening Post

Works on any gas—installs 4 ways Can be mounted on post (as at left)

With decorator pole

Can be mounted on table

Can be mounted on wall with decorator bracket

Also makers of famous Vit-Rock water heaters, Decorama space heaters, Coleman lanterns, camp stoves, jugs and coolers—mobile home heating and air conditioning

The Coleman Company, Inc., Wichita 1, Kansas
Quickly send more information on your Gas-Lite promotion.
*Name*_____ *Title*_____
*Firm Name*_____
*Address*_____
*City*_____ *Zone*_____ *State*_____

OHI To Discuss Electric Heat Competition, Air Conditioning with Oil April 4-7

NEW YORK CITY—Electric heat competition and air conditioning with oil are two of the topics scheduled for discussion during the 38th annual convention of the Oil Heat Institute of America.

The convention will be held April 4-7 with most sessions at the Park-Sheraton hotel. Also taking place on those dates will be the 23rd National Oil Heat Air Conditioning Exposition. Show hours are 1 to 9 p.m. daily.

Two special convention sessions has been planned for plumbing and heating and warm air heating contractors on "Electric Heat Competition." They will be held Wednesday and Thursday, April 6 and 7, from 3 to 5:30 p.m. on the mezzanine of the Coliseum. The Wednesday session is for plumbing and heating contractors, the other one for warm air heating contractors.

These sessions are in addition to the OHI Distribution Div. dealer-distributor-jobber business building rallies to be held Wednesday and Thursday mornings, and the commercial-industrial sessions which will be held each morning, Monday through Thursday, at the Park-Sheraton.

At the business building rally Thursday, the subject of oil-fired summer air conditioning will be discussed by William Wepfer, general sales manager of Arkla Air Conditioning Corp.

The Diamond Jubilee Exposition will feature such items as oil-fired air conditioners, the latest in burners and boilers for commercial-industrial use, an array of new warm-air furnaces, and advanced equipment in the hydronics field.

In addition, various displays will demonstrate the newest in oil delivery techniques and the handling of office equipment, and will dramatize new heating oils.

Dunham-Bush Names Maben To Ad Post

WEST HARTFORD, Conn.—Appointment of Aden H. Maben as assistant advertising manager for Dunham-Bush, Inc. has been announced by Walter S. Browning, vice president of heating sales.

Maben will assist in directing the international advertising and sales promotion program of Dunham-Bush. He has been connected with sales of Dunham-Bush for five years.

New ARI Sealed Unit Standard--

(Continued from Page 1, Col. 5)

cooled, and water-cooled sealed condensing units 20 hp. (nominal) and under. It applies to sealed refrigerant compressors and condensing units using Refrigerants 12 and 22.

Issuance of ARI Standard 515-60 is in line with the present reorganization of ARI Product-Sections, under which the Centrifugal Liquid-Chilling Packages Section, the Reciprocating Compressor and Condensing Unit Section (with three sub-sections), and the Reciprocating Liquid-Chilling Packages Section, were created, and two previously-existing sections—the Small Compressors Section and the Air Conditioning and Refrigeration Systems Section—were dropped, their members transferring to the applicable new sections or subsections.

Two other new ARI standards are scheduled for publication early in 1960 in connection with these changes. The new ones will be:

ARI Standard 511-60, "Ammonia Compressors," whose publication will result in the withdrawal of the present Standards 5-12, "Enclosed Ammonia Compressors, Vertical Single-Acting Type,"; 5-13, "Performance of Ammonia Compressors, Vertical Single-Acting Type"; 5-14, "Standard Equipment for Ammonia Condensing Units"; and 5-15, "High-Speed Ammonia Compressors."

ARI Standard 516-60, "Refrigerant 12 and Refrigerant 22 Compressors and Condensing Units, 25 Horsepower and Larger," which will replace existing standards 5-21, "'Freon' Compressor Units, 25 Horsepower and Larger," and 5-22, "'Freon' Condensing Units, 25 Horsepower and Larger."

The new standard 515-60, which was developed by ARI's Engineering Dept. under the supervision of the Reciprocating Compressor and Condensing Unit Section, is available from ARI at 25 cents per copy.

Hussmann--

(Continued from Page 1, Col. 5)

presidents; H. A. Giovanni, secretary-treasurer; and V. B. Winkeler, assistant secretary-treasurer. All directors were also re-elected.

Caulk joined Hussmann in 1937 and has served in various management capacities. He was elected vice president in charge of engineering in 1953 and vice president in charge of manufacturing in 1955. He was elected executive vice president in 1956.

In addition to being a director of Hussmann Refrigerator, he is also a director of the St. Louis Union Trust Co. and the Metropolitan St. Louis Chamber of Commerce.

McMillan said at the annual meeting of the company that Hussmann expects higher sales, orders, and earnings for the first quarter.

Buensod-Stacey--

(Continued from Page 1, Col. 1)

about $12 million.

Aeronca builds large subassemblies for jet aircraft, training target missiles, and sub-assemblies and ground support equipment for missile and electronic applications. It is also a leading builder of brazed stainless steel honeycomb structures for advanced aircraft.

With 1959 sales of $23,500,000, Aeronca had a backlog of orders of almost $21 million at the end of last year and $5 million of orders are under negotiation.

Kelvinator Sales Up

DETROIT—February sales of major appliances by Kelvinator increased nearly 13.5% over February of last year, Homer L. Travis, vice president in charge of sales, reported.

Refrigerators and home laundry equipment once again led the over-all increase.

A new achievement in FRAM Air Filters with specially engineered Celanese Fibers

Now comes a revolutionary new filter for home and commercial use! Tests prove Fram filters last longer and actually kill over 99% of trapped bacteria! Celanese fibers—engineered exclusively for Fram—minimize surface loading to provide full depth maze filtration. Result? Fram filters deliver 34% greater filter life and dirt retention.

16 leading manufacturers of heating and cooling equipment, firms such as RCA Whirlpool, Trane, Gibson, Coleman, York and Westinghouse Warm Air Furnace, have chosen Fram filters for their 1960 lines. Dependable, economical, these superior new filters are available in all sizes as well as rolls and pads. For full details, call or write: Fram Aire Corporation, a division of Fram Corporation, Providence 16, Rhode Island. Listed by Underwriters Laboratories, Inc.

Celanese Fibers Company, a division of Celanese Corporation of America, N. Y. 16. Celanese®

Celanese Industrial fibers

G-E Announces Weatherman Contest Winners

MORRISON, Ill. — Two heating control dealer servicemen have won a seven-day, expense-paid Florida vacation as top prize in the nationwide "Be A Weatherman Contest" sponsored by the Appliance Control Dept. of General Electric Co. through its heating control distributors.

Top forecasters in this national contest are James J. Carr, Ralph's Heating Service, Chicago, and Richard C. Whitehurst, Schulz Hardware, Wonewoc, Wis., who tied for first place.

To win the contest, Carr and Whitehurst submitted entries which predicted the inches of snow that would fall at Stampede Pass, Wash., during the period Dec. 1, 1959, through Jan. 15, 1960. They also forecasted the lowest temperature that would be recorded at the Mt. Washington Observatory, N. H., on Jan. 15, 1960.

Actual figures, reported by the U. S. Weather Bureau show that 82.8 in. of snow fell at Stampede Pass during the period. Lowest temperature recorded at the Mt. Washington Observatory on Jan. 15 was 15°. Both Carr and Whitehurst guessed 83 in. of snowfall and 13°.

Added feature of the contest was the duplicate Florida trip awarded to the G-E heating control service centers which sponsored the winning dealer "weathermen." Robert Barclay, Inc., Chicago, and Wisconsin Furnace Co., Madison, were the winning service centers.

Illinois Mechanics' Liens Act To Be Topic Of Chicago Seminar

CHICAGO—The University of Chicago Downtown Center will present an intensive one-day seminar on the scope and operation of the Illinois Mechanics' Liens Act on April 8 at the La Salle hotel for contractors, subcontractors, materialmen, loan officers, architects, engineers, and other persons concerned with construction and real estate.

Practicing attorneys will discuss various procedures and practices necessary to secure protection and avoid pitfalls under the act.

Alabama Contractors Study Name Change

BIRMINGHAM, Ala. — The board of directors of Alabama State Plumbing & Heating Dealers has voted to recommend that the name of the association be changed to Alabama Plumbing, Heating, Cooling Contractors.

This will be voted on by the association at its annual convention in Tuscaloosa May 12-14. The suggested name is held to better cover the activities of members of the association.

Mueller Brass Adopts More Modern Symbol

Block 'M' with Inverted Triangle To Identify Firm

PORT HURON, Mich.—Mueller Brass Co. has adopted a new corporate symbol, according to Fred L. Riggin, Jr., executive vice president.

The symbol, a block "M," with an inverted triangle over the center, is a modernized version of the symbol that has represented the company since its organization over 40 years ago.

Mueller Brass has been a major fabricator of non-ferrous metals since the First World War when it was founded to produce brass forgings for the armed forces. Today, it is one of the most diversified manufacturers in the country, the company noted.

"In addition to brass, bronze, and aluminum forgings, Mueller Brass produces impact extrusions, brass rod, screw machine products and castings, plastic moldings, pipe, and custom extrusions," it was pointed out.

"Mueller Brass is also a major supplier of copper tube, fittings, valves, and accessories to the plumbing and heating industries. The company also produces a wide range of component parts used in refrigeration and air conditioning."

In speaking of the new symbol, Riggin said it would serve to identify the diverse products of Mueller Brass, as well as the many products of the wholly-owned subsidiaries, which include American Sinteel Corp. of Yonkers, N. Y., producer of precision powdered metal parts; Valley Metal Products Co., Plainwell, Mich., manufacturer of aluminum windows, curtain wall panels and entrance doors; Vampco Aluminum Products, Ltd., Strathroy, Ont., Canadian supplier of aluminum windows and panel walls as well as maker of steel shelving and counters; Sheet Aluminum Corp. of Jackson, Mich., producer of aluminum in sheet, coil, and strip form.

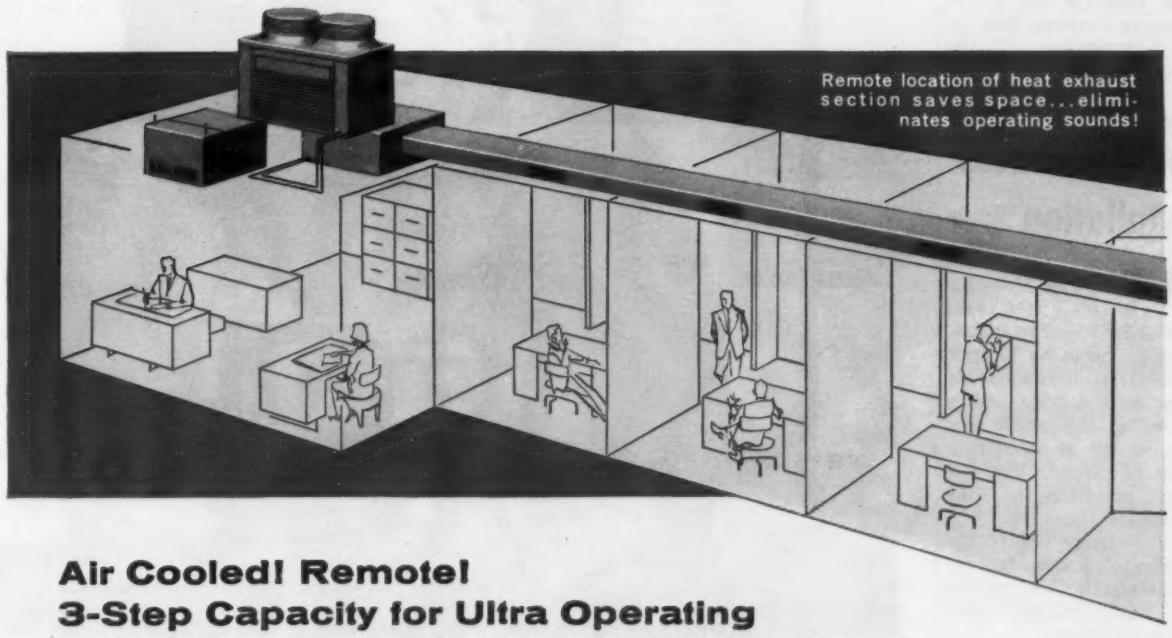
Riggin also pointed out that the new corporate symbol will become strongly identified with research and methods analysis departments of Mueller Brass as a reliable source for engineering information in design and application of non-ferrous metals.

During the past few years, Riggin said, these departments have been substantially responsible for new methods and processes which have allowed Mueller Brass to become a major contributor to the continually advancing technology in the production of a whole host of parts.

FRED L. RIGGIN, JR., executive vice president of Mueller Brass Co., and A. C. Dappert, vice president in charge of sales, left, examine the new corporate symbol recently adopted by the company.

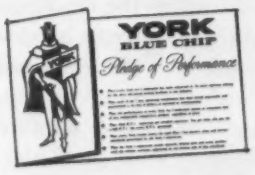
TO INCREASE YOUR SALES POTENTIAL

NOW YORK ADDS 22½ TON AIR CONDITIONER TO ITS LOW-AMBIENT LINE!



Air Cooled! Remote!
3-Step Capacity for Ultra Operating Economy in Even the Largest Installations!

Another sales exclusive no competitor can match! For the heavy duty market—a Low Ambient York model that can be operated even when the outside temperature gets as low as 0 degrees F. That means this new Champion model can be used the year round! A vital factor in stores and offices where crowds, lights, or equipment create a stuffy atmosphere even in the dead of winter! With York, you can quickly cool and dehumidify the air; improve working conditions; up productivity! The Champion is air cooled, too! No costly water towers or water bills! 3 separate compressors! 30% better humidity removal! 15% lower operating costs! Yet the unit costs no more than ordinary air conditioners!



YORK BLUE CHIP DIVIDEND FOR 1960

Exclusive York *Pledge of Performance* offers the most rewarding sales and profit opportunities in air conditioning today!

MAIL COUPON!

General Sales Manager
Packaged Products Div.
York Corporation
York, Pennsylvania
AHR-3

I'm interested! Send me full details on 1960 York Commercial Air Conditioners and the new Pledge of Performance.

NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

York Puts More Into Every Unit, So You Get More Out of It!

YORK

YORK CORP., SUBSIDIARY OF BORG-WARNER CORP. GRANTLEY ROAD, YORK, PA.

BW DIVISION

BORG-WARNER RESEARCH & ENGINEERING MAKE IT BETTER

Air Conditioning, Heating, Refrigeration and Ice-Making Equipment • Products for Home, Commercial and Industrial Installations

Heating System for New ASM Building Combines Three Different Methods

CLEVELAND — One of the most unusual heating systems of recent years is now in operation in the recently-completed American Society for Metals headquarters office building in Metals Park, 22 miles east of downtown Cleveland.

Strikingly designed by Architect John Terence Kelly, tremendous amounts of exposed windows, exposed concrete slab, and a desire to provide for future cooling resulted in a system that employs air handling units, radiant floor panels, and fin tube perimeter radiation.

Spanned by what is said to be the world's largest space lattice, 274 ft. in diameter and 103 ft. high, the building is semicircular and contains approximately 50,000 sq. ft. of floor area, on three levels. Construction is reinforced concrete floor slabs on exposed steel columns, with a total of 23,000 sq. ft. of window walls.

A number of factors made heating system design a complicated affair for the consulting engineer, Mayer & Valentine, and the plumbing and heating contractor, Spohn Heating & Ventilating Co.

These were the tremendous glass areas, running one square foot for every square foot of floor area, projection of the upper concrete slab out beyond the lower floor exposing it to outside cold, and the desire to provide for a future air conditioning system.

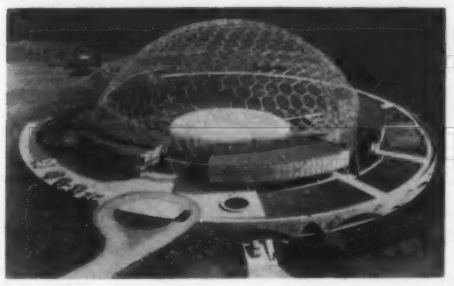
To accommodate these conditions and provide satisfactory heating, a most unusual system was designed and installed. It consists of fin tube radiation on the exterior walls, a radiant floor panel system on the top floor, and a multizoned air handling system.

All three components are supplied with hot water heated by a single 3,800,000 B.t.u.h. boiler. This hot water circulates directly through Chase copper tube type "L" headers to the multizoned air handling units and the fin tube radiation.

In addition, it heats, through a converter, the water-antifreeze solution used to heat the radiant floor panels, by circulating through ½-in. soft type "L" Chase tube with soldered fittings.

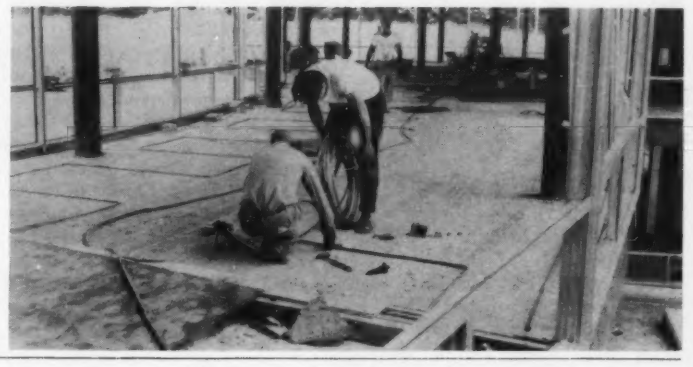
While the bulk of heating is accomplished by the fin tube radiation, close room control is maintained through the zoned air-handling units. Individual room thermostats are used. Temperature of the circulating water is adjusted by the indoor-outdoor temperature control.

In addition, the radiant heat is controlled to go out of operation as outdoor temperatures reach 60°, the converter heating cuts out at 65°, and the air handling shuts off at 70° F.



LEFT: Aerial view shows entire ASM Headquarters building, road approach, and parking area.

BELOW: Workmen of Spohn Heating & Ventilating Co., Cleveland, install Chase copper tube Type "L" flexible, as part of the radiant panel heating system for the ASM building.



Pioneer Announces Pre-Installation Service Classes

LOS ANGELES — Pre-installation service classes to be held at dealer-selected locations for installation and service crews of both heating equipment and water heaters will be a continuing program of Pioneer Mfg. Co. during 1960, according to Mike Noonan, service manager.

Service knowledge before the sale, and service knowledge before the installation, according to Noonan, can eliminate costly return trips for repair.

Content of the classes includes a background of case histories of service and repair built upon the experience of close correlation between field engineering and service department personnel, a portion of the session devoted to particular service problems the dealer's crews are experiencing, and a closing question and answer session.

Pioneer service classes are usually evening classes held during the week at the dealer's place of business or at a meeting place selected by the dealer. Usual time required per class is about three hours.

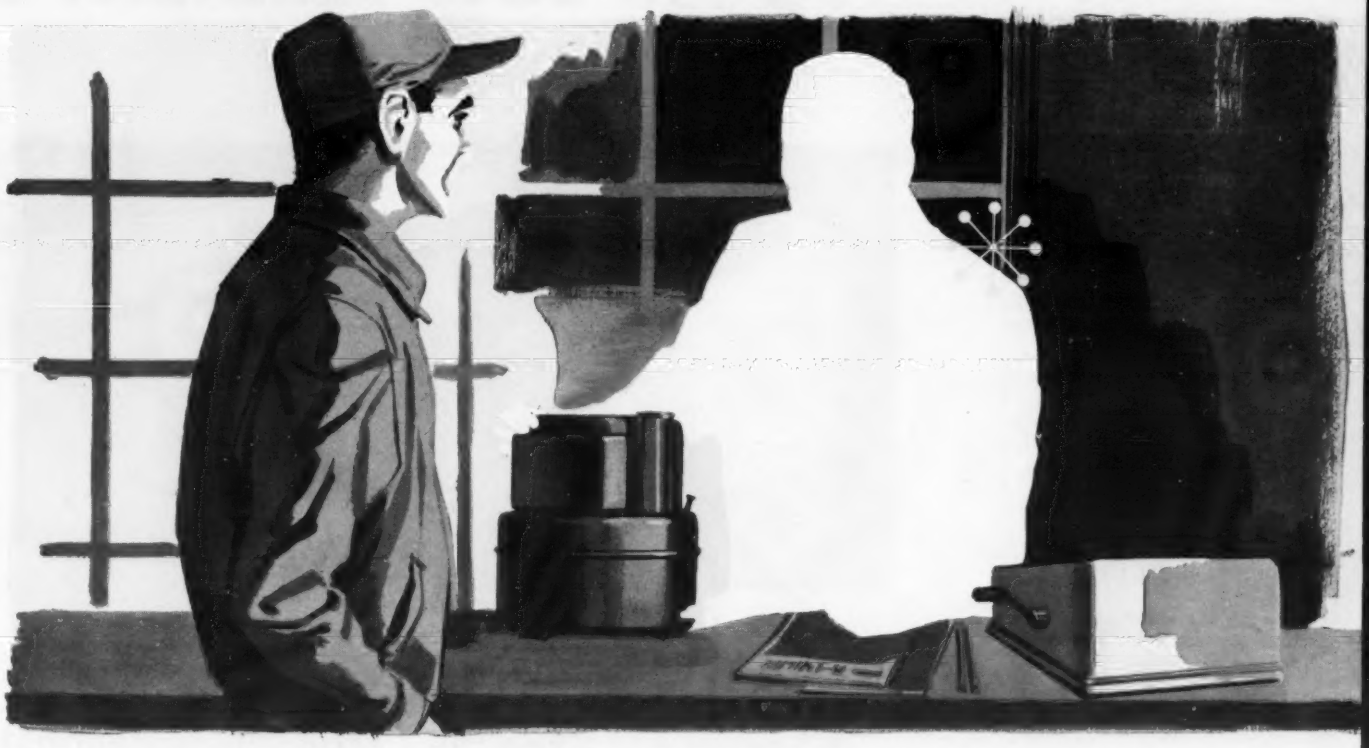
Pioneer supplies the technicians and engineers free of charge, as well as major class room supplies, it was noted.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Tecumseh

37 MILLION COMPRESSORS IN THE FIELD

WHOLESALERS....



this man works for you....

The more than two hundred Tecumseh authorized wholesalers located in key cities across the country, are in business to serve you. They are, in fact, an extension of our own service department. Each has a well-established business, tailored to give you fast, efficient service. Because of their close association with Tecumseh, these authorized wholesalers have the advantage of being exposed to more diversified compressor applications and, accordingly, their salesmen are more likely to be better experienced in handling your particular problem. Wholesalers stock replacement compressors and parts in adequate volume, based on usage figures in their specific areas. This should normally guarantee you immediate replacement. However, in emergencies, your wholesaler can obtain expedited compressor delivery out of the Tecumseh warehouse at Marion, Ohio. To insure the best and most complete service organization, the Tecumseh Wholesaler Program provides greater incentives to the wholesaler. No wonder this man works for you!

Typhoon Flies 106 To Las Vegas Meeting

BROOKLYN — Typhoon Air Conditioning Div., Hupp Corp., flew 106 distributors to Las Vegas recently for a five-day sales meeting.

John Gilbreath, sales vice president, reported this was a 100% increase in attendance for the annual session held last year in Mexico. Meetings for the distributors were held at the Riviera hotel.

North Carolina Exams Set for April 20-23

RALEIGH, N. C. — Examination of applicants in plumbing, heating, and air conditioning will be held at the Carolina hotel here April 20-23 by the State Board of Examiners of Plumbing and Heating Contractors.

Coleman Distributor-Dealer Training Strives for More Product Knowledge

WICHITA, Kan. — Greater product knowledge on the part of distributors and dealers is the foundation of the Coleman Co.'s expanded training program for 1960, the company reports.

Backbone of the program which eventually will reach part of the country, is a series of seven distributor-dealer meetings being held at the Coleman Training Institute in Wichita.

The first school, a five-day refresher course in air conditioning, was held Feb. 29 through March 4.

A second type of school, the first of which was held March 7-11, was devoted to the merchandising of the full line of Coleman heating and air conditioning equipment.

Air conditioning schools consist of specialized training on all current Coleman air conditioning equipment and include information and practice in sizing, installing, servicing, and selling. Classroom lectures are interspersed with shop sessions under the personal direction of Coleman sales engineers.

Both types of meetings are designed to serve as comprehensive review courses for experienced dealers and key distributor personnel. Distributor trainees will in turn conduct "grass roots" meetings in their areas bringing essential information to all Coleman dealers.

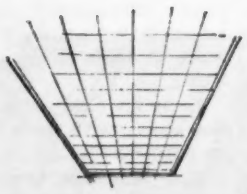
Classes in both heating and air conditioning are using all new facilities and equipment as the result of a relocation of the Training Institute. The institute now occupies a 12,000-sq. ft. location on the second floor of the Coleman Administration building in downtown Wichita.

The school is one of the largest and best equipped in the industry, according to Jess L. Moore, general manager of the Coleman Heating and Air Conditioning Div.

Begun in 1936 and expanded in 1946 with the establishment of the institute, the manufacturer's factory training program has attracted more than 7,000 dealers to Wichita for instruction in merchandising.

WORKROOM of Coleman Training Institute affords practical experience in air conditioning installation and service. Trainees work in two and three-man teams under supervision of Coleman sales engineers. Furnaces with cooling coils are located in adjoining room and are connected to condensing units in foreground.

each a case history in
compressor know-how, service and application



11:30 A.M. Tecumseh wholesaler, John Jones, receives call from serviceman at local supermarket. Needs 1 HP replacement compressor for inoperative case. Also has noticed that small frozen food case is cycling on overload.

11:45 A.M. Proper Tecumseh compressor together with an electrical kit, recommended by Jones for complete electrical component replacement, is sent out to supermarket on wholesaler's truck.

3:30 P.M. Serviceman has installed the replacement compressor . . . the primary reason for his service call . . . along with the new electrical components and a complete check of the smaller case. Both jobs completed in one call, in less time.

The above case history of a typical service problem indicates the quick response you can expect from your Tecumseh authorized wholesaler. It does not presume that your own servicing outlets cannot handle the bulk of service calls themselves. Rather, it means that whatever the request, the Tecumseh wholesaler nearest you stands ready to do his part, knowing that time is of utmost importance. Call on him when you need him. We think you will both appreciate it.

A complete list of authorized Tecumseh wholesalers is available on request.

TECUMSEH

The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries

TECUMSEH PRODUCTS COMPANY

MARION, OHIO — TECUMSEH, MICHIGAN

EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan
CANADA: Tecumseh Products of Canada Limited, 1667 Dundas St., London, Ontario.

A. Roger Kelly To Head N. Y. Office For Dubin Assocates

NEW YORK CITY—Fred S. Dubin Associates, consulting engineer, with offices here and in Boston, Hartford, Conn., St. Louis, and San Juan, announce the appointment of A. Roger Kelly, P. E., as associate and manager of the New York office.

Kelly has practiced consulting engineering in the New York area for more than 15 years and has been responsible for the design and management of many complex projects.

The firm's New York office was recently moved from 312 7th Ave. to 7 E. 47th St. New address of its Hartford office is 635 Farmington Ave., Hartford 5, Conn.

The concern's services pertain to heating, ventilating, air conditioning, plumbing, electrical, structural, and sanitary systems.

Calif. RSES Convention Set for April 22-23

BAKERSFIELD, Calif.—Fifteenth annual convention of the California Association, Refrigeration Service Engineers Society, will be held at the Hacienda motel in Bakersfield Friday and Saturday, April 22-23.

W. H. Speilman, general convention chairman for the host Southern San Joaquin RSES chapter, and manager of Refrigeration Supplies Distributor wholesale house, said the program will follow the workshop pattern.

Peck Heads Fedders Financial Corp.

MASPETH, N. Y. — Thomas A. Peck has been named general manager of the recently-formed Fedders Financial Corp., a wholly-owned subsidiary of the Fedders Corp., according to Salvatore Giordano, president of both firms.

Fedders Financial was incorporated last August to assist wholesale distributors and retail dealers in financing their purchases of Fedders air conditioning equipment. Prior to his new appointment, Peck was credit manager of the parent firm for five years.

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

Sinclair Lewis, George Jean Nathan, Theodore Dreiser, H. L. Mencken, the Happy Hooligan and Katzenjammer Kids comic strips . . . those were the days!

Mary Pickford, Douglas Fairbanks, Fatty Arbuckle, Mack Sennett, Buster Keaton, Charlie Chaplin in the silent movies—where your piano teacher added to her income by pounding out "Dixie," "Traumerei," and "Hearts and Flowers" at appropriate moments.

Recall the iceman who lugged 50-pound chunks of ice, or whatever your card in the window requested? . . . When a big score in basketball games was 21-12? . . . when saving money and building "capital" were both fashionable and feasible?

Story of the Week

"Gigi, our pixieish tiny French poodle, is a dog with a dog-like habit. She likes to drag things around. When the family is out, Gigi has a perfect opportunity to indulge in her favorite pastime.

"Upon returning from wherever, we will find various shoes, magazines, gloves, fireplace matches, socks, under-garments, pillows, ashtrays, books, hats, and what-have-you scattered ad lib around the living room.

"The end-all occurred last week.

"Our portable TV went on the blitz. So this all-thumbs columnist called television repair expert (or so he thinks) Bob Price '60. Price clomped in and, with gay abandon, dismantled the idiot box on the living room floor.

" 'I'll have this thing running in a jiffy,' he said with typical Price modesty. (In a jiffy, Price was stumped.)

"Not to be discouraged, we wheeled over to his house to consult an instruction manual.

"Meanwhile, Mother arrived home from an exhausting downtown shopping session. Stepping into the living room, she came unglued. There was this discombooberated TV set in the middle of the floor; and nobody home but Gigi, smirking in the middle of the pieces.

"Mother, completely unnerved, retreated to Cleveland to visit friends who don't have inquisitive dogs."

Keep an Eye on This Lad

The above anecdote was lifted verbatim from a high school newspaper column conducted by Dope's son, Greg.

The latter is well known to hundreds of subscribers because, down through the years, Greg has accompanied "Dope" on many business trips, and on a number of occasions has sat at the Speaker's Table while his Old Man speechified.

Greg is 17, now, and 6-feet-one tall. Thank goodness, he inherited his appearance and charm from his mother.

"How's Greg doing?" subscribers often ask us. To answer, let's quote a feature article which appeared in a recent issue of the *Grosse Pointe News,* under the byline of Pat Talbot.

"Managing editor of the Grosse Pointe High School's weekly newspaper, *The Tower,* student manager of the swimming team, President of the state champion school band, Treasurer of the Tuxis Club, with an A average in his studies, Greg Taubeneck still has time to write and rehearse for the upcoming Tuxis Variety Show.

"Greg has written the whole show, including comedy skits with Bob Price, David Tucker, and Jan Conway. With Jan he will do a Louis Prima-Keeley Smith parody in the show, which is a satire on television.

"Greg has his sights set on a career in radio or television and hopes to attend the University of Illinois, his father's alma mater, next fall. Incidentally, he is an excellent speaker, he sings bass in the Memorial Church senior choir, and he gets top grades.

"During the summer he is handyman for the Belle Isle band concerts conducted by Leonard Smith. His hours are from 5 until midnight, but he revels in this contact with professional musicians.

"Greg plays the drums in the high school band, and just last week won a first place award for a snare drum solo in the Southeastern Michigan Solo and Ensemble Festival.

"An attractive, gangling young man who wears horn-rimmed glasses, Greg is unusually mature about his plans for the future, and spends a great deal of time thinking about the world outside his own very demanding and exciting sphere.

"With other members of Tuxis he recently studied the hydrogen bomb and its implications. His conclusion is that pacifism would be fine in an ideal society, but in the present world he would rather die in a total war than live in a totalitarian state. "Freedom is an instinct," he asserts.

"As editor of *The Tower* he is trying to turn his student readers to view the wider horizons of their future lives, rather than such vital school problems as discipline, social activities, and courses.

"Greg walks to and from school. With all his extra-curricular jobs, he rarely gets home until 7 or 8 p.m. He studies week nights, leaves dating for the week-ends. Every Sunday morning and night is reserved for church. Saturday mornings for choir rehearsal.

"He is proud of the professional tone of *The Tower,* which is 'always winning prizes.' Last week this weekly high school publication won a national award from the Freedom Foundation, is a top member of Quill and Scroll.

"Greg accompanies the swimming team to all out-of-town meets as its manager, often has written up the results for the *Grosse Pointe News.* Not an athlete himself, he is an avid fan of professional sports. He shares this interest with his father, who is an editor and author.

"His mother, who gives Greg top marks for responsibility (he can even cook his own dinner) has lent her creative abilities to her son. She is a talented amateur actress.

"If any student in the class of 1960 deserves the 'Most Likely To Succeed' laurel it should be Greg Taubeneck."

Fraternity Men, Please Note

Unlike his proud father, Greg is a natural Organization Man. He works exceedingly well with his contemporaries; and they, in turn, invariably respond by electing him to top posts in their organizations.

University of Illinois alumni, who seem to dominate the heating and air conditioning fields, might consider suggesting Greg to their respective fraternities.

He'd be a good catch.

R. D. Marshall Opens Branch In Utica, N. Y.

ALBANY, N. Y. — R. D. Marshall & Co., Inc., refrigeration and air conditioning supplies wholesalers here, announced the opening of a branch store at Main & Second Sts. in Utica, N. Y.

Leon C. Lust is manager of the store, with Jack Grimsteed as his assistant.

The Marshall firm said this move will improve its service to the Mohawk Valley - Upstate eastern New York area.

DISTRIBUTOR DAN AND THE CASE OF THE H-6 LEAK DETECTOR
AUTOMATIC BALANCE!
HOW CAN I PINPOINT LEAKS WHEN THE AIR HAS BEEN CONTAMINATED BY REFRIGERANT?
AIR CONDITIONING & REFRIGERATION SERVICE
THE H-6 CAN HANDLE THAT... THANKS TO ITS EXCLUSIVE AUTOMATIC BALANCE FEATURE.
HERE'S HOW IT WORKS... THE PROBE FLASHES AS SOON AS IT SNIFFS ANY HALOGEN GAS...
...AND WILL ONLY FLASH AGAIN EACH TIME IT SNIFFS HIGHER AND HIGHER CONCENTRATION AS THE PROBE APPROACHES THE LEAK.
TO BE SURE YOU'VE FOUND THE LEAK, "CLEAR" THE UNIT BY MOVING THE PROBE UP AND AWAY FROM THE LEAK AREA INTO A CLEANER ATMOSPHERE.
...THIS DROPS THE BALANCE AND THE PROBE WILL RE-FLASH WHEN IT SNIFFS THE LEAK AGAIN.
WITH SENSITIVITY SET FOR ½ OZ. LEAKS, IF ONE OR TWO LONG FLASHES OCCUR IN LEAK AREA, GRADUALLY REDUCE SENSITIVITY... CLEARING UNIT AFTER EACH SNIFF... UNTIL ONLY ONE QUICK FLASH APPEARS. THIS PINPOINTS THE LEAK.
AUTOMATIC BALANCE WILL ALLOW YOU TO FIND LEAKS AS SMALL AS ½ OZ. A YEAR IN BACKGROUND CONCENTRATION AS HIGH AS 100 PARTS OF REFRIGERANT PER MILLION PARTS OF AIR!
Watch for more tips from Distributor Dan and...
FOR MORE COMPLETE INFORMATION ON THE TYPE H-6 LEAK DETECTOR, CONTACT YOUR NEAREST AIR CONDITIONING AND REFRIGERATION WHOLESALER: OR SEND THIS COUPON TODAY FOR BULLETIN GEA-6827, TO GENERAL ELECTRIC COMPANY SECTION 595-410 SCHENECTADY 5, N.Y.
U.S. MAIL
NAME
ADDRESS
COMPANY
STATE
INSTRUMENT DEPARTMENT
GENERAL ELECTRIC

SERVICE UNLIMITED WITH EVERY ORDER. The customer is king with Bendix-Westinghouse. When you place an order for compressor or condensing unit equipment with us, we make your business our business. Our staff of engineers stands ready to give you any assistance you may desire in tailoring Bendix-Westinghouse installations to your individual requirements. And this service continues after the sale, too! Why not look over the facts on the back of this page and see how easily Bendix-Westinghouse can fit into your product plans.

Bendix-Westinghouse MOTOR COMPRESSORS

BENDIX-WESTINGHOUSE "OVAL-LINE" MOTOR COMPRESSORS PROVIDE GREATER EFFICIENCY... IN LESS SPACE...AT LOWER COST

Looking for compact ¼- or ⅓-h.p. motor compressor design that will let you provide more refrigeration space in standard-size cabinets?

Want a low-cost compressor with longer, more dependable operating life?

Anxious to find a compressor with greater operating efficiency?

The YCH25V-1 and the YCH33V-1 models in the Bendix-Westinghouse "Oval-Line" provide *all* these advantages. Their two-pole design makes possible lighter weight, smaller size, and lower cost. They also supply such superior performance features as: inherent overload protection, better motor insulation, full suction gas cooling, positive pressure lubrication and glass terminals.

If you use fractional horsepower motor compressors in your manufacture of beverage coolers, vending machines, water coolers, dehumidifiers, or other general commercial type cooling equipment, investigate the Bendix-Westinghouse "Oval-Line" compressors. Call or write direct.

Bendix-Westinghouse

EVANSVILLE, INDIANA

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio
Export Sales: Bendix International, 205 E. 42nd St., New York 17, N.Y.

Overseas Distributors Meet People Who Make Westinghouse Products

COLUMBUS, Ohio—The people who sell Westinghouse appliances abroad met with the people who make the products.

Representatives of 40 of the company's distributor organizations from 30 nations in Europe, Asia, Africa, and Latin America held their first convention at a Westinghouse plant Feb. 22.

The program was conducted by sales executives from the Westinghouse Electric International Co. and by design, manufacturing, and sales representatives from Westinghouse Electric Corp. plants in Columbus and Mansfield, Ohio, and Metuchen and Bloomfield, N. J.

Nations represented here include Argentina, Barbados, Bermuda, British Guiana, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, England, France, French Guiana, Germany, Haiti, Iceland, Italy, Jamaica, Japan, Korea, Nicaragua, Panama, Peru, Philippine Islands, Portugal, Puerto Rico, Switzerland, Taiwan, Trinidad, Venezuela, and Vietnam.

Navy Facilities In Manila To Be Cooled by D-H

LOS ANGELES — George L. Tubbs, Inc. and Williams Equipment Co., Manila, together with air conditioning manufacturer Drayer-Hanson Div., National-U. S. Radiator Corp., and distributor Climate Control International here, jointly announced a major contract to air condition certain phases of U. S. Navy new construction in the Philippines.

Site is the Navy exchange, commissary building, gas service station, and officers' club at the Subic Bay facility.

Drayer's products slated for the project include single-zoned floor mounted, single-zoned ceiling suspended, and central-station multizone types of air handling units.

According to Climate Control's president, Berry Benson, this is the second Navy job recently secured for the Los Angeles manufacturer in the Islands.

Williams Equipment, Manila, is the Island distributor for Drayer-Hanson, via parent firm, Climate Control International.

Emerson Electric International Formed

ST. LOUIS — Formation of Emerson Electric International as a base for expanding the European activities of Emerson Electric Mfg. Co. was announced by W. R. Persons, president.

A Swiss concern, the firm will license European companies to make Emerson Electric products, mainly commercial items, he said. Persons added that negotiations were in progress for an electric motor manufacturing operation in the European Common Market.

He also reported that the firm is establishing licensees in South America and Australia.

Common Market Area Firms Form Association

LONDON, England — The newly-formed European Committee of Refrigeration Equipment Manufacturers is typical of the new professional associations on a Common Market or European scale which have sprung up recently, according to the *Financial Times*.

The committee, which held its inaugural session in Paris, has formed a sub-group of its Common Market members. It is concerned mainly with production methods and standard safety rules.

'Atmosphere Printanniere'

Perfumed Air Gives Cambodian Theater Scent of Spring

LA CROSSE, Wis.—When a theater in the Asiatic nation of Cambodia recently remodeled and installed Trane air conditioning, they went The Trane Co. here one better and perfumed the air in the showhouse as well.

The air conditioning-perfuming was part of an extensive project which made the Casino Theater, Phnom-Penh, a movie palace which might be the envy of many American cities.

In addition to the air treatment, a cinemascope screen was installed and the building completely remodeled, repainted, and sound engineered with acoustical floor and ceiling paneling.

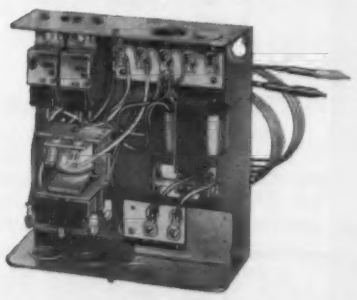
But to get back to that perfume. The particular exotic scent used in the theater is called "atmosphere printanniere" (air of spring) and an ad in the "Echos de Phnom-Penh" announcing the innovation says it is a fragrance designed to refresh the theater without being too heady for the moviegoers.

Admission to this delightful atmosphere? Cambodians will be wafted through such upcoming attraction as Walt Disney's "Sleeping Beauty" on the "air of spring" at regular movie prices.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

COOLING CENTER
controls the remote condensing unit. Internal circuits are factory-wired.
FAN CENTER
controls the air handling equipment on all systems with remote condensing units.
COOLING CENTER
PENN CONTROLS, INC.
PENN
FAN CENTER

ALL-NEW!
"CODED" CONTROL CENTERS
for residential air conditioning



SYSTEM CENTER
interlocks in one unit all heating-cooling functions for self-contained systems.

In Penn's newest line of Control Centers, field-replaceable parts are easy to get out . . . easy to get in *correctly* because all internal wiring is color coded. And, these color-coded leads are equipped with *quick-connect terminals* . . . no more looping of wire or soldering connections.

There are other advantages, too! Centers are small to save space in compact 2 and 3 H.P. units. Wrap-around cases save wiring time in factory and field. And, field-installed Fan Centers have Life Guard reverse panel construction. All operating parts are easily accessible, yet are fully protected against accidental damage. Write to the Penn factory for the complete story on these new, better Control Centers.

PENN CONTROLS, INC. Goshen, Indiana
EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

A 'Parts and Pieces' Story to a Homeowner?

(3) Story of Product, Installation Quality Driven Home By Texas Salesman with 'Rig' He Devised for Himself

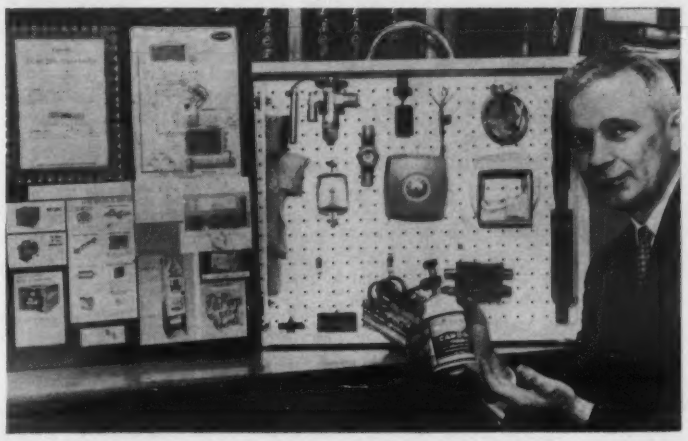
ARCH HUGHSTON of Frymire Engineering Co., Dallas, has proved that making "home calls" can develop sales of central residential air conditioning systems. However, he credits much of his success to some unusual methods.

Prime among these is his "rig" or carrying kit containing actual or miniaturized parts, together with photographs and drawings. With the help of this kit he does an oldtime piece-by-piece "breakdown" job of selling, to explain to puzzled prospects how air conditioning works, and to drive home the advantages of his product, and of dealing with the dealer-contractor he represents. This particular story explains how he tells the "quality" story of the product and of the completed installation.

The "rig" or carrying kit fitted with parts or miniaturized parts which Arch Hughston carries with him on visits to prospects for residential air conditioning systems is used to explain the workings of an air conditioning system, and thus gain the prospect's interest, and create confidence in the salesman.

But Hughston thinks the greater value of the "rig" is in selling a quality installation, and the idea that the installing dealer which he represents is looking after the interests of the buyer in the way in which the installation will be made. As Hughston tells it:

"Of course you have a quality story to tell about the brand of product you are selling, and some of the parts and pieces in the 'rig' help out on that. But just as important, and maybe more so in the eyes of the prospect, is the story about how the dealer I represent will make an installation that will assure the buyer getting the best possible job—that will perform best and require the least service. And it is the best way to sell against a lower price which a competitor might offer.



PARTS AND PIECES which Arch Hughston carries on the pegboard side of his "rig" or carrying kit include such items as an expansion valve, piece of round duct with damper, cooling-heating thermostat, refrigerant sight glass, duct and pipe insulation, and a piece of a cooling coil. Hughston holds his "$1.95 air conditioning system," a can of refrigerant attached to a miniature cooling coil, with which he is able to describe some of the principles and complexities of a comfort cooling system.

* * *

Plus Features Described

"For example, I say that we install balancing dampers, and explain what this means in the way of better performance. I tell how we install insulation of the proper type to give the buyer the best and most economical operating system regardless of the few cents extra cost involved.

Isolation Pads

" 'We use isolation pads underneath the condensing units,' I tell them. 'We put one under each corner and two under the compressor, one under each end. This does two things. First of all, it lifts the condensing unit up off the concrete slab and this allows water to drain under it. Also, it isolates any noise from being transferred from the unit to the slab.

Sight Glass

" 'We put a sight glass in the refrigerant line,' I explain, 'more for your benefit than anyone because if your unit ever did happen to run short of refrigerant it would take a serviceman a long time and quite a bit of fussing with gauges and valves to check the unit out pressure-wise to see if the system was short of refrigerant whereas anyone can check it with a sight glass, it is merely a matter of pulling the cap off of the glass and looking into it.

Drier-Strainer

" 'There's a drier-strainer in the system which not only strains the refrigerant to remove any foreign particles that might become entrained in the refrigerant, and the drier contains a chemical which absorbs moisture, and traps it.

" 'If you had water in the system,' I explain, 'and it hit that expansion valve and its temperature dropped to below zero right quick the first thing you know the hole would be stopped up with ice, and the system couldn't function, and that's why it's important to keep water out of the system.

" 'Suction line insulation,' I tell the prospect, 'is not only a thermal barrier but a vapor seal as well, and makes a nice looking job when it is finished, compared with some of the other

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stuff that it used that either falls off the line or dries out.'

"Then I take the heating-cooling thermostat and if I am talking with both the husband and wife, I try to get both of them to handle it. The women are always interested when I tell them that the thermostat changes from cooling to heating and vice versa automatically, because in many cases they have friends who may have had a complaint about the problem of having servicemen come out to shutdown the cooling and start up the heating, and the reverse.

"You must realize, of course, that I interrupt this explanation of the parts of the system periodically by trying to close the deal, and if they put it off, I turn to another part or ask them if there is something they didn't understand about some part I've already covered. Of course anytime they show a readiness to sign I close the deal, and end the discussion, unless they have some further questions.

Uses Compressor Pictures In Selling

"In talking about the compressor I have to use pictures and I talk about such things as the quality of steel in the valves, the microfinished crankshaft which is dynamically balanced, automatic safety controls, and the muffler that goes on the hot gas lines. You can get some special interest in the muffler, because people are curious about how much noise an air conditioner will make, and you can point out that the muffler serves much the same purpose as it does on an automobile.

TX Valve Compared To Carburetor

"You can give people a more graphic description of how a thermostatic expansion valve works by pointing out that it serves much the same purpose in an air conditioning system as a carburetor does to an auto.

" 'It lets the rate of flow of refrigerant be metered into the cooling coil as the need requires,' I tell them, and then I say, 'If you are going up a hill in your automobile you have to step on the gas, and on a real hot day when you need lots of cooling, the expansion valve steps on the gas for you.

" 'It opens up wider and lets more cold refrigerant into that coil because you need more heat removed, compared with a capillary tube which is like having a straight line from the gas tank to the engine, where it could only run at but one speed.'

"If they show more interest in the expansion valve," Hughston continues, "I go into a detailed explanation, taking it apart for them so to speak, and showing them what a complex piece of machinery this little valve is. When I get through I say 'You compare and see what this is made of. Which one do you think is the best?' You have justified a good part of your price differential right there."

(A following instalment will describe the use of certain other visual and unusual sales aids which Hughston has found helpful in closing the sale of a central residential air conditioning system.)

In Hamilton, Ont.

Council O.K.'s Ruling Requiring Recirculation on Water-Cooled Systems

HAMILTON, Ont., Can. — Under a ruling approved by City council, all new water-cooled air conditioning systems installed in Hamilton must use recirculating water.

Other municipalities have realized the tremendous drain on their water water supplies caused by the increasing popularity of air conditioning, it was pointed out, and many have passed legislation restricting the type of equipment to be installed.

However, Hamilton's new restriction is the most stringent yet introduced, according to Reg Monaghan, deputy city engineer.

What about buildings which are already equipped with the "open" type of system?

Monaghan said this was under study by the city solicitor's department, and a detailed check was being made by city inspectors to see exactly how many buildings had this type of equipment installed.

"We would like to bring in a ruling that all buildings equipped with the 'open' system are required to change over to the 'closed' system within a fixed period of time," he said.

The air conditioning business in Hamilton has accepted the need for the new regulations but men in the trade are reportedly taking a pessimistic view of its affect on business.

W. M. Douglas of Douglas Refrigeration explained that where a "closed" cooling system is used it adds about 20% to the cost of installing air conditioning.

Firms planning air conditioning—commercial and industrial installations account for 97% of the business — have also weighed the extra cost of a "closed" system against the savings in metered water costs.

"And it has been worked out that it is not possible to write off the cost of the 'closed' cooling system unit in under 12 years on the basis of six months' use every year," explained Douglas.

Douglas added that it was hoped the city would allow persons who had installed the now forbidden "open" system to keep it for the lifetime of the equipment.

Peter A. Rose Named By Kramer Trenton

TRENTON, N. J.—Peter A. Rose has been appointed to the engineering and sales staff of the Kramer Trenton Co., it was announced by S. Charles Segal, Kramer general sales manager.

P. A. Rose

Rose is southeast area representative with headquarters in Atlanta.

He brings to Kramer Trenton a decade of engineering and managerial experience, it was noted. He was formerly chief engineer for Larkin Coils Inc. in Atlanta.

A graduate of the Georgia Institute of Technology, Rose holds a B.S. degree in physics and a M.A. in science.

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A. E. Burden Co. To Distribute Bock Conditioners for Small Foreign Cars

HOUSTON, Texas—The Alan E. Burden Co., Inc. here announced that it has been granted exclusive world-wide distribution rights for air conditioning units made for small foreign cars by the Bock Co. of Nurtingen, West Germany.

HEADQUARTERS LISTED

Alan E. Burden, president of the local firm, who recently returned from Europe, said the company will handle its North American markets from Houston, while South America will be supplied from Maracaibo, Venezuela, and the rest of the Free World from its office in Hamburg, Germany.

A former R.A.F. pilot and organizer of the R.A.F. Flying Mercy Corps, Burden believes that his company will distribute some 50,000 units during the first year of operation. He said he had already signed up distributors in Washington, D. C., New York City, Los Angeles, and Tucson, Ariz.

5,000 UNITS TO DATE

According to Burden, the German company went into production a few months ago and some 5,000 units had been produced and shipped to various world market centers. He said Bock will make the Burdo-Europa air conditioning units at about 7,000 to 8,000 a month.

Burden also distributes other Bock products including condensing units, valves, and refrigeration component parts. In addition, he acquired distribution rights in Texas, Louisiana, and Alabama for Porsche and Volkswagen marine engine products.

Burden is a former personal pilot for Sir Winston Churchill and Lawrence of Arabia.

New Houston Firm To Market A.R.A. Units

HOUSTON, Texas—Air Conditioners, Unlimited, a newly-formed firm located at 4001 McGowen, announced that it has been appointed distributor for A.R.A. auto air conditioners.

"We will install and service eight cars at a time and will offer evening installations to dealers and the public if necessary," said Mordy Foodym, manager.

He said the firm will be introducing the model M-1 for compact and foreign cars, and all other 1960 A.R.A. models.

1960 FRIGIKING Model 60-UD auto air conditioner is available for 200 different makes and models of American cars from 1952-1960, and some foreign cars, according to the company.

'Turbojet-Stream-Air'

Frigikar Features 'New Concept' In Auto Air Conditioners for 1960

DALLAS — Frigikar Corp. President Bert J. Mitchell reports a 38% sale increase in the firm's 10th anniversary year of 1959—and for 1960 announces a "new concept" in automobile air conditioning, which his firm calls "turbo-jet-stream-air."

This is being introduced in the new 1960 model "Frigiking" 60-UD underdash air conditioner said to be capable of changing air in the average car two times every minute. The unit is available for 200 different makes and models of American automobiles, from 1952 to 1960 inclusive, and some foreign cars, the company said.

The innovation designed by Frigikar engineers "utilizes dual turbine-type-blade air distribution system providing an air-rotor activated on a direct drive from a specially-designed motor," it was explained. "Turbine-type blades are arranged to force air over every square inch of the cooling-coil for 100% utilization of cooling capacity."

Quieter Operation Claimed

The 1960 Frigiking provides quieter operation, according to the company.

For special foot comfort of driver and other front-seat passengers, 360° rotatable louvers are placed in each end-panel of the Frigiking console, to direct cool air on feet and legs, if desired.

The Frigiking front panel, restyled to harmonize with 1960 automobile design-lines, incorporates four rotatable louvers plus other Frigiking features. These include "simplified push-button 'MagneTouch' no-draft temperature control which permits selecting temperature level and air speed to suit the occupants' cooling requirements, and city-driving — highway-driving control dial that assures ample cooling in congested city driving," it was stated.

Quick, Easy Installation Cited as Feature

"The 1960 Frigiking model 60-UD is designed for quick, easy installation by dealers and distributors in owner's present or new car; and is sold through a network of domestic distributors in 43 states plus many foreign countries and territories. A strong warranty policy covers both parts and labor service from coast to coast."

In addition to the underdash air conditioner, Frigikar, now located at 10858 Harry Hines Blvd., Dallas, in a new 4-acre plant, manufactures a back-package tray unit, "Frigikab" truck air conditioners; "Frigibus" air conditioning for city and school buses; and "Air-Con" auto air conditioning servicing equipment.

President Mitchell anticipates a substantial 1960 sales increase over 1959.

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Bryant Reports

Orders for New Gas Air Conditioner Exceed 75% of Planned Output

INDIANAPOLIS — Bryant Mfg. Co. officials report that orders on hand for the new model 450 gas air conditioner exceed 75% of the production planned for the 1960 season.

The Bryant unit, which was placed on the market last year, burns gas outdoors to produce chilled water which circulates to cooling coils located wherever convenient in the conditioned space.

In reporting on the order pattern, Keith Davis, manager of gas air conditioning, explained, "Most of the orders now on hand call for shipments at a uniform monthly rate during the first eight months of 1960 in compliance with Bryant's pre-season order plan. Regular orders are also being received for delivery in April and May.

"Every possible step is being taken to increase production schedules at Bryant's Indianapolis plant in anticipation of a forecasted increase in the demand for the gas air conditioner," Davis said.

In addition to the model 450 which is a 3-ton unit, a 4½-ton model will be available this spring. The two units are very similar, both being outdoor units, entirely air-cooled, quiet, and automatic in operation, it was stated. Both units are designed for add-on cooling application to existing or in new-home furnace installations.

York Bows Electrostatic Filters for Home

YORK, Pa. — York Div. of Borg-Warner Corp. has announced its new line of electrostatic air filters for 1960.

Noting that dirty, contaminated air is one of the growing health problems, York officials said they believe electronic air purification will be just as important as air cooling in the near future.

York engineers claim their new filter will trap between 98 and 99% of all visible dust, soot, pollens, fungus, and, unlike ordinary filters, will filter out from half to three-fourths of the visible particles in the air.

"Installed in forced air ducts, the York filter requires no plumbing or drainage lines," it was pointed out. "As air passes through the filter, the charging section gives dirt and bacteria particles a positive electrical charge. These particles are then attracted and held by negatively-charged collector plates.

THE York electrostatic air filter, designed for use in residential forced air heating and cooling systems, will trap between 98 and 99% of all visible dust, soot, pollens, and fungus in the air and, unlike ordinary filters, will also remove from half to three fourths of the invisible particles. In addition to its health benefits, this new filter reduces housework and extends life of paint and fabrics.

"The entire collector section can be easily removed for cleaning. The current automatically shuts off when this section is removed."

William T. Goldsmith, residential packaged products sales manager, reports the York filter is completely automatic; it operates whenever the furnace blower is operating.

According to Goldsmith, the line consists of the models 120, 160, and 240 ceries, all in 115-volt capacities. The dimensions of each are 22 by 20 by 21, 22 by 24 by 26, 22 by 24 by 29, respectively. The larger size, which is said to handle up to 2,400 c.f.m., has about 14,000 sq. in. of collector plate area.

Airtemp Names Foster To Advertising Post

DAYTON—Arthur L. Foster has been appointed as advertising manager of Airtemp Div., Chrysler Corp., according to R. R. Routh, Jr., director of advertising and sales promotion.

A. L. Foster

Foster has been the Airtemp account executive in the Dayton office of Close & Patenaude, Philadelphia sales promotion agency.

He was appointed advertising manager for Stromberg-Carlson Co. in 1954 and two years later was named sales manager for J. H. Sparks, Inc., Philadelphia, then a distributor of Stromberg-Carlson products. Foster became advertising director in 1958 of Progress Mfg. Co., Philadelphia, and a year later moved to Close & Patenaude.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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They'll Do It Every Time

by

Jimmy Hatlo

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I THINK SHE USED TO COLLECT FOR THE PURPLE MOB··· SHE'S AROUND EVERY PAYDAY EVEN BEFORE MY WELTER-WEIGHT···
I WAS ACROSS THE STREET IN FLOOGLE CO. THE OTHER DAY··· SHE WAS HELPING SOME OTHER DAME PASS THE HAT OVER THERE···
MRS. STRONGARM IS AT IT AGAIN··· SHE'LL RUN A BLAST AT THE DROP OF A PAPER HAT···
I JUST REMEMBERED··· I GOTTA GET LOST···
SPEAKING OF THE HIGH COST OF JUST HOLDING A JOB··· MEET DURESSA···
THANX AND A HAT TIP TO HERMAN BRODER, 472 BROAD ST., NEWARK, N.J.
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2-19

What Price Stability?

HAVE WE MANAGED to overcome Depressions here in the United States? Forever? As Al Smith used to say, let's look at the record.

On the plus side, more than 25 years have elapsed since a financial panic or desperate unemployment situation has occurred in North America. Sure, we have had a few "recessions" of relatively short duration, but they weren't Depressions in the historical sense.

How have we reversed (or modified) this historical cycle? One answer: modifications in our methods and manners of earning a living, and enjoying life, may have contributed to this happy, self-congratulatory circumstance.

Government spendings — Federal, state, and local—are extravagant, naturally, but they do happen to be modifiers. Fifty years ago government accounted for a tiny one-fourteenth of national spending. Today, it's one-fourth and still climbing.

Demands for weapons, schooling, subsidies to farmers and veterans, road building, etc., have risen sharply—thanks to politicians and pressure groups.

Contracyclical behavior of government *largesse* was not designed primarily to check depressions, but it has worked out to that effect. Concomitantly: these outpourings of our tax moneys have abetted INFLATION!

America's growing service businesses—which have zoomed from employing 24 per cent of our labor force in 1919 to 46 per cent in 1959—comprise another reason why the boom-and-bust cycle has been interrupted. White-collar occupations are less subject to layoffs than mass production jobs. (One reason: white-collar folk don't go out "on strike").

Taxation is a stabilizing force, too (although it's nauseating to stomach personally). When incomes decline, people's tax payments drop—but government expenditures continue at the same high old rates.

Thus confiscatory taxation becomes a built-in cushion against economic declines. (At the same time, it's inflationary). In the long run, excessive taxation robs investors (thus slowing down economic progress) and undercuts consumer spending.

During the 1957-58 recession U.S.A. production dropped 14 per cent, and gross national product funked down 5 per cent. But personal income slumped little more than 1.6 per cent. How is that explained?

More white-collar workers, fewer going-for-broke small farmers, a proliferation of insurance and pension systems, and more unioneers covered by long-term contracts—plus more stable corporate dividend policies.

Politically speaking, it seems that we have discarded the notion that depressions are wholesome purgatives which promote industrial efficiency and economic progress by making jobs scare for awhile. Automatically, nowadays, Congress ups its spending during temporary halts in the economic cycle.

Unemployment compensation, social security, and old-age pensions also are moderating factors. In 1940 only seven per cent of our citizens over 65 were eligible for government pensions. Nowadays that percentage has increased tenfold.

Concurrently, extra unemployment benefits and pension plans sponsored by corporations—plus such new spread-the-money-around boons as profit sharing and mutual investment funds—combine to make retirement attractive and feasible.

Additionally, huge corporations are pursuing long-term programs for plant expansion, both in this country and abroad. Therefore, they adhere to less erratic inventory policies than heretofore. All these internationally expansion policies tend to ameliorate, rather than aggravate, that Old Devil—the Boom and Bust Depression Cycle.

Moreover, our Federal Reserve System (plus insurance of bank and savings-and-loan accounts) eases credit during declines, and tightens it when everybody and his brother Herman goes hog-wild for speculative greed situations.

At considerable cost to entrepreneurs and pensioners, fears of financial panics have been reduced. However, the continually rising trend in prices, and the rapid expansion of consumer and mortgage debt, may serve to complicate future "recessions."

What price Security? Here are some of the pertinent costs:

Governmental interference with (and possibly eventual *control* of) private business; the virtual end of Ma-and-Pa stores; taxed-out-of-existence small family business dynasties; frustration for young men who, in an earlier age, would have become Captains of Industry. These are the casualties.

Is the concept of government-guaranteed "security" robbing our children of their birthrights, and our elderly folk of a happy old age?

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SEEKS REPRINTS OF RESIDENTIAL EDITORIAL

Chicago Furnace Supply Co.
Chicago, Ill.

Editor:

We wish to compliment you on your excellent article in February 8th issue, "Here's How to Build Residential Air Conditioning Sales-Service!"

If reprints are available, we would like to purchase 200 for distribution to our trade. Thank you.

F. R. McKAY

SERVICE FIRM FINDS G-E REBUTTAL INTERESTING

Anpa Refrigeration Co., Inc.
Woodhaven, N. Y.

Editor:

We read with a great deal of interest your Dope article on "General Electric's Rebuttal" which appeared in the Feb. 29, 1960 issue of the NEWS.

Being we are a dealer and service organization in the metropolitan area of New York and surrounding vicinity, we were surprised to note your comment of General Electric's equipment not being serviced by dealers.

I personally know a few dealers besides us that are willing and capable of servicing equipment for the benefit of our industry.

WILLIAM WALSH

ENLIGHTENED PUBLIC ONLY HOPE FOR CHANGE

Federal Corp.
Oklahoma City

Editor:

As a subscriber, we wish to congratulate the NEWS on the editorial, "You Can't Win If Government Pulls the Rug From Underneath You" in the Feb. 29 issue.

We need more such articles since an enlightened public is the only thing that will change disastrous Government spending.

LOUIS LOEFFLER, JR.

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Lennox Bows 'Apartment House' All-Season Package

MARSHALLTOWN, Iowa — Lennox Industries, Inc. announces an unusual heating-cooling package for apartments and small commercial applications.

"All the equipment, including gas furnace, cooling coil, and air-cooled condensing unit, fits within a 36-in. by 36-in. closet," the company said. "It provides complete, ducted all-season comfort conditioning for an apartment, with individual control for that apartment.

Lennox predicts that "builders will like the ease of installation and the favorable price in comparison with multi-zoned systems of other types." Another advantage claimed is that, by putting the heating and air conditioning under the tenant's responsibility, the builder frees working capital.

"Installed, the air handling face of the condensing unit extends through an outside wall and is flush with the outer wall surface," it was explained. "The part of the condensing unit that remains in the closet becomes the base for the furnace. The cooling coil is mounted on top of the furnace.

"Completely assembled, the unit requires only 89 in. of headroom. Trunk duct is taken off the side of the cooling coil cabinet. This cabinet can even be trimmed down another four inches if desired. Return air can be brought back between floor joists or through grilles in closet walls.

"This unit provides a nominal 2 tons of cooling and 51,000 B.t.u.h. input of heating (all gases). For convenience the furnace can be set facing either right or left.

"The design of the condensing unit lets it handle intake and exhaust air on the same side. Or, by switching face plates, exhaust can be from either right or left side.

"This feature increases application possibilities, such as air shaft applications in apartment buildings. In such a case, condenser supply and exhaust air is handled in separate air shafts which are a part of the building construction. These shafts can be sized to accommodate condenser air for the entire building. (If desired, the condensing unit can be separated from the complete package and installed anywhere.)

"Pre-charged refrigerant lines with self-sealing 'quick couplers' are standard equipment. They permit safe storage and a quick 'marriage' of the condensing unit and cooling coil at time of installation."

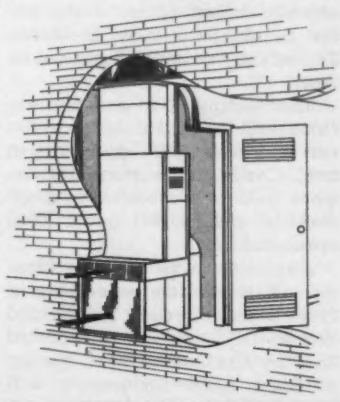
The company said the furnace has a continuous welded heat exchanger, aluminized steel burners, 100% safety shut-off, built-in draft diverter, 24-volt control system, Lennox "hammock" type throwaway air filter, and a quiet, direct-drive blower.

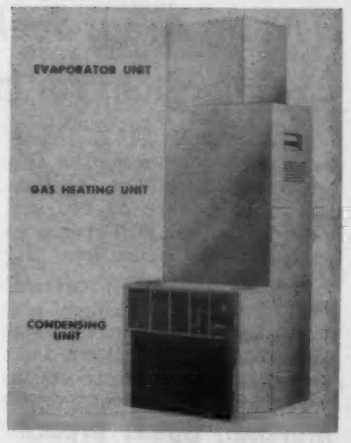
Steel cabinets have deluxe baked enamel finish. The cooling units have ½-in. acoustical fiber glass insulation. Air mover in the condensing unit is the Lennox "Power Prop."

A new refrigerant circuiting method in the large four-row condenser coil increases the amount of refrigerant sub-cooling, according to Lennox. It is claimed this improves B.t.u. per watt performance because the liquid refrigerant reaches the evaporator coil up to 20° F. cooler than the condensing temperature.

Room-type combination heating-cooling mercury bulb thermostat is included.

BELOW: Sketch shows typical installation of Lennox "Apartment House" all-season package. Condenser unit face extends through outside wall. Return air duct can be seen on far side of furnace. Eight-inch plenum extension has been added to coil section.





ABOVE: Lennox "Apartment House" all-season package. Bottom section is condensing unit; air intake is through lower part of front; exhaust from upper part. Gas furnace, in middle, can be faced the opposite direction. Cooling coil section is on top; duct can be taken off the side of this section.

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ST. LOUIS 25, MO.

REMEMBER . . .

. . . the bite of the ice pick splitting a block of ice . . . the clank of tongs . . . the heave of the ice cake to the iceman's soaking shoulder apron? Remember his dripping trail up the walk, across the porch and kitchen to the icebox? What an appetite it had for cakes of ice . . . remember? And "mop up those tracks . . . don't forget to empty the drip pan!"

While the iceman made his rounds years ago, scientists worked to perfect a safe refrigerant. In 1931 development of "Freon" refrigerant opened the door to progress that has put safe, efficient, carefree refrigeration into nearly every home in the country. Today, "Freon" stands first for quality and leadership in serving the refrigeration and air conditioning industries.

Just as "Freon" is the refrigerant you know and trust, you can be sure Du Pont will continue research and development of its products and packaging. Always look for new developments from Du Pont. E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, Wilmington 98, Delaware.

*Freon and combinations of Freon- or F- followed by numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon refrigerants.

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premium quality

refrigerants

DU PONT

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

3 More Areas Seek OHI Certification Examinations for Heating Servicemen

NEW YORK CITY — Three more areas applied to the Distribution Div. of the Oil Heat Institute of America for permission to hold OHI-sponsored certification examinations for oil heat servicemen in the respective areas.

They are: Michiana Oil Heat Institute, of South Bend, Ind.; The Oil Heat Institute of Indianapolis; and the Capital District Fuel Association, Albany, N. Y.

The Albany examination has already taken place. Date for the Indianapolis exam is March 22 and for the South Bend exam, April 13.

The holding of these examinations will bring the total areas certified under OHI standards to five. Certification examinations were held in November in Connecticut and Florida under local sponsorship.

Applications to hold certification examinations are coming in from areas all over the United States, OHI said. It is expected that by the end of next spring, at least 1,000 servicemen will be certified by the institute.

Motor Burnouts Is Topic of Slide Film

EVANSVILLE, Ind.—"Burned Up About Burnouts" is the title of an effective color slide film presentation developed by Bendix-Westinghouse here.

The sound film explains the causes of motor burnouts—low line voltage, loss of refrigerant, and high head pressure—and gives a step-by-step procedure to follow in replacing the motor compressor in a manner which will eliminate a repeat failure due to system contamination from the original burnout, according to the announcement.

According to BW, the new film has met with very good acceptance at various RSES meetings and dealer gatherings. A booklet has been prepared from the film and is used to supplement the presentation.

ARW Directors Will Meet April 8-9

CLEVELAND—The board of directors of the Air-Conditioning & Refrigeration Wholesalers will meet at the Carter hotel here on April 8 and 9.

This is the annual spring meeting set up to discuss and take action on association affairs. Said President W. C. Miessemer: "All members of the association, manufacturers, or members of the trade are encouraged to direct specific problems to our headquarter offices for board action."

During the meeting, the directors will visit the new office headquarters set up in Cleveland last December. The 11 members of the board are:

Region 1—C. G. Koopman, Boston; Region 2—I. J. Fajans, New York City; Region 3—Paul Bodwell, Harrisburg, Pa.; Region 4—E. S. Diggle, Charlotte, N. C.; Region 5—E. H. Davey, Akron, Ohio; Region 6—E. P. Sorensen, Chicago; Region 7 — Frank Pond, Minneapolis; Region 8—Paul Cato, Dallas; Region 9—W. C. Miessemer, Phoenix; Region 11—Jack Tupper, Seattle; and Region 12 —H. A. Dawson, New Orleans.

Lowell H. Rood Dies

BUFFALO—The recent death of Lowell H. Rood in Palo Alto, Calif. was reported by Niagara Blower Co. here.

Rood was president of General Industrial Equipment Co., representative of Niagara Blower as district engineer since 1943. General Industrial Equipment continues to act for Niagara Blower in Pacific Coast states, it was noted.

Marshall Opens Branch In Kingston, Ont.

TORONTO, Ont., Can. — Marshall Refrigeration Co., Ltd. has announced the opening of its branch sales warehouse at 161 Colborne St., Kingston, Ont.

Donald Reid has been appointed manager of this branch office and he will maintain complete stocks of heating, air conditioning, and refrigeration equipment and supplies for the service dealers and contractors, it was stated.

Reid has been with the company since 1949, and for the past few years has been a sales representative in the Toronto office.

New Wholesaler Opens for Business In Birmingham, Ala.

BIRMINGHAM, Ala. — Steel City Wholesalers, Inc. has opened for business at 2809 5th Ave. S., Birminghan, to cover Alabama and northwest Florida.

The concern is wholesale distributor for York air conditioning, Modine unit heaters, Hardwick gas ranges, Peerless and Atlanta space heaters, Marquette appliances, Honeywell controls, and other related lines in the plumbing, heating, and air conditioning fields.

Officers of the company are David Roberts III, chairman of the board; J. W. (Bill) Hamilton, president; and Elmer R. McDaniel, executive vice president.

Romito Directs Production For General Chemical

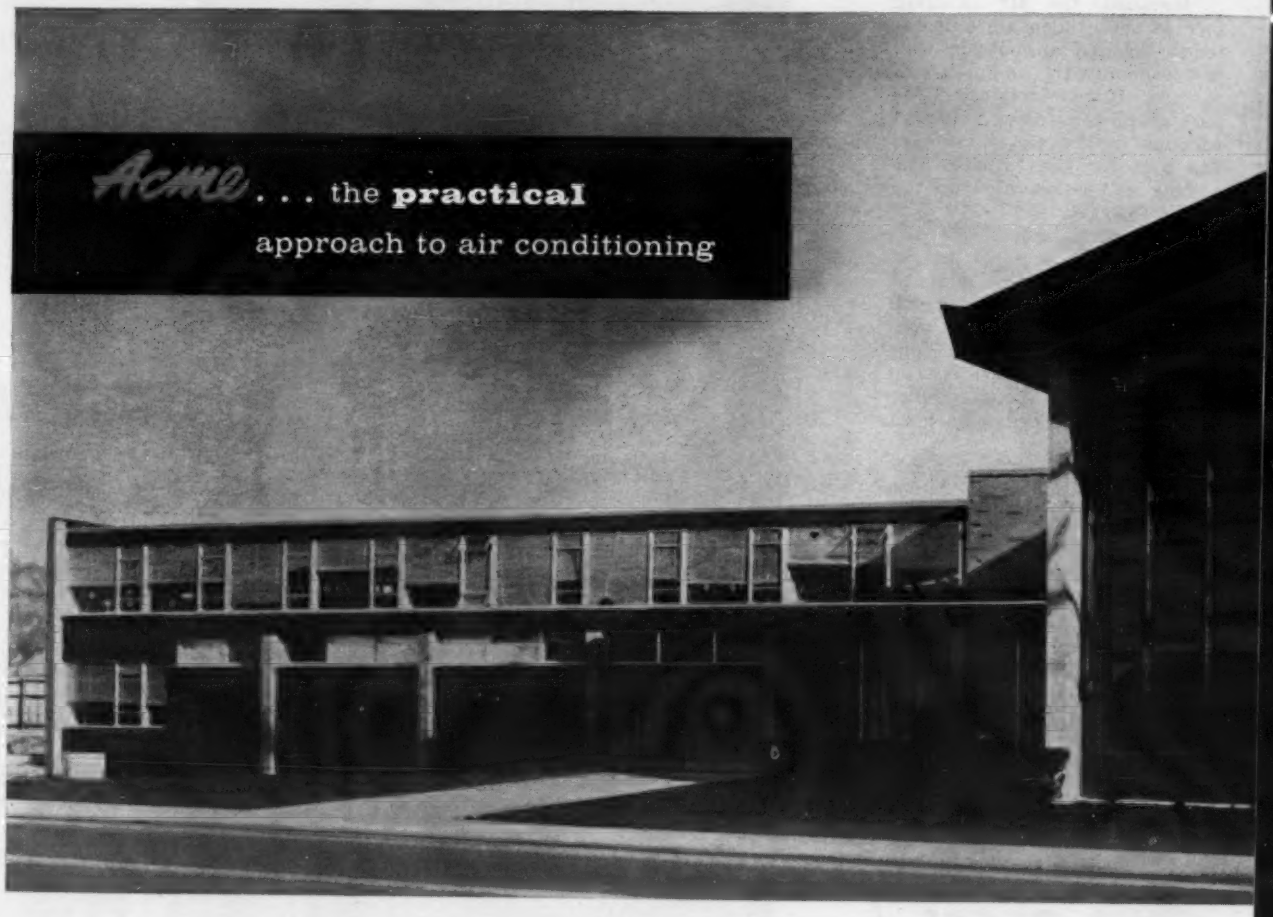
NEW YORK CITY—Appointment of Virgil A. Romito as director of production of Allied Chemical's General Chemical Div. has been announced by J. Steele Brown, vice president.

Until his appointment last year as maintenance manager, Romito had been plant manager of the division's largest producing facility, Delaware Works at North Claymont, Del., for five years.

Get your copy

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzalez—25¢ each.

Mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.



Acme air conditioned in just two weeks!

That's right! A 75-ton Acme cooling system for comfort conditioning the temple area, meeting rooms and catering facilities at the Jewish Community Center, West Hempstead, Long Island, was installed and in operation in a period of just *two weeks* . . . an undertaking that would normally require closer to *two months* to complete.

That's a reduction in installation time of approximately 75% . . . a fact that can be attributed in considerable measure, certainly, to the excellent caliber of service rendered by the Warren Contracting Corporation, Bethpage, Long Island . . . a fact that can also be attributed to the Acme equipment used. For Acme system components offer easy-to-handle lightness, space-saving compactness, factory-packaged simplicity . . . features that are attested to by Mr. Calvin Berch, Warren Contracting engineer who, with particular reference to Acme's Flow-Therm chiller, states: "We are extremely pleased with the Acme cooling unit. It's a neatly packaged, lightweight, compact unit which fits into tight quarters and requires a minimum of floor space."

Acme advanced engineering has resulted furthermore, in greater capacity, better efficiency, less maintenance per cubic foot, per pound, per dollar invested than you'll find in any other air conditioning system equipment currently on the market.

So, if you're looking for a *practical* approach to your air conditioning needs, look to Acme.

Natkin Elects Kleinkauf and Gould

OMAHA, Neb.—The board of directors of Natkin & Co. announced the election of two of the firm's top officials to new positions.

Henry Kleinkauf, Omaha, president of the mechanical contracting firm since 1950, was named executive chairman of the board of directors, and Henry Gould, Kansas City, has been named president and treasurer. Gould formerly was executive vice president and treasurer.

Both men have been with Natkin for approximately 30 years and are professional engineers.

Founded in Kansas City in 1908, Natkin has become a leader in the mechanical construction field specializing in process and pressure piping, air conditioning, plumbing, and heating for commercial and industrial projects, it was noted. The company's operations include design and fabrication facilities as well as installation and maintenance of mechanical systems. The firm has 11 plant and office locations in the midwest and southwest.

Lillington Garment Plant To Be Air Conditioned

LILLINGTON, N. C. — Completely air conditioned, the new addition to the plant of Lillington Garment Co., now under construction, is expected to be completed by June 1.

The local plant, maker of men's fine sports shirts, currently employs 225 persons. The new addition will provide double the work space.

Trailer-Mounted Conditioner Aids Service on Military Jet Planes

SCHENECTADY, N. Y. — Military jet planes are crammed with sensitive instruments, and their cockpits must be kept at a constant temperature while the planes are being serviced on the ground.

A portable trailer-mounted air conditioner for this duty must perform reliably in remote locations, in wind and dust storms, and at temperatures as high as 140° F., according to General Electric Co.

G-E a-c motors, 324 of them, where chosen by the air conditioner equipment maker, Recony Div., Vimco Corp. of Richmond, Va., to power the 108 trailer-mounted units Recony is building for the Air Force, it was reported.

"General Electric's field engineers and designers in the company's Small AC Motor & Generator Dept. at Schenectady worked closely with Recony engineers in 'Econo-Matching' the motors to the driven equipment for maximum reliability and performance," G-E pointed out. "Econo-Matching is a comprehensive application service recently announced by the motor department.

"First plans called for one 75-hp. motor to drive all three parts of each unit: blower, compressor, and condenser fan. A saving in total horsepower, space, and mechanical maintenance was achieved when Recony redesigned for three smaller motors, totalling only 69 hp. Blower motor is 36.2 hp., compressor motor 25.5 hp., and condenser fan motor 7.5 hp. All are fan cooled. The motors are sequence started to limit in-rush currents.

"Available space on the trailer was utilized by carefully matching the motor size and characteristics to the driven machines," it was stated. "Space saving for the blower motor was achieved by building the motor in a smaller-than-normal frame and beefing up the insulation.

"Orders were also received for magnetic motor starters and a main air circuit breaker for each of these air conditioning installations."

Curtis Industries Plant, Office To Be Air Conditioned

CLEVELAND—A $1,000,000 plant and office headquarters to be built in Eastlake for Curtis Industries, Inc. will be completely air conditioned, it was reported.

The firm is a large Greater Cleveland manufacturer and distributor of keys, key-cutting equipment, and auto replacement parts. It will centralize all its present activities within the 95,000-sq. ft. building, which has been designed and will be constructed by Austin Co. of Cleveland.

Refrigeration machinery will be installed on a 6,000-sq. ft. central mechanical service mezzanine situated between the plant and office areas.

The one-floor building will feature a decorative semi-screen of vertical molded pre-cast concrete panels around the exterior of the 140 by 180-ft. office wing to eliminate glare. The plant proper will be enclosed with a sill-wall of buff face brick surrounded by a ribbed aluminum insulated sandwich wall, according to the announcement.

7 Orient, P.&O. Ships Will Be Air Conditioned

LONDON, England — Principal ships of the Orient and P. & O. fleets are being converted to complete air conditioning.

Reporting that a total of seven ships is involved, *The Times Review of Industry* noted that all of them were built in the first decade after the war "when space in passenger ships was easy to sell.

"It was not at first appreciated that air conditioning would before long become accepted as a necessity by Europeans living in hot climates, and when the ships were designed the air conditioning was confined to certain public rooms and selected cabins.

"Now, however, it is clear that if a ship is to be successful it must offer air conditioning throughout."

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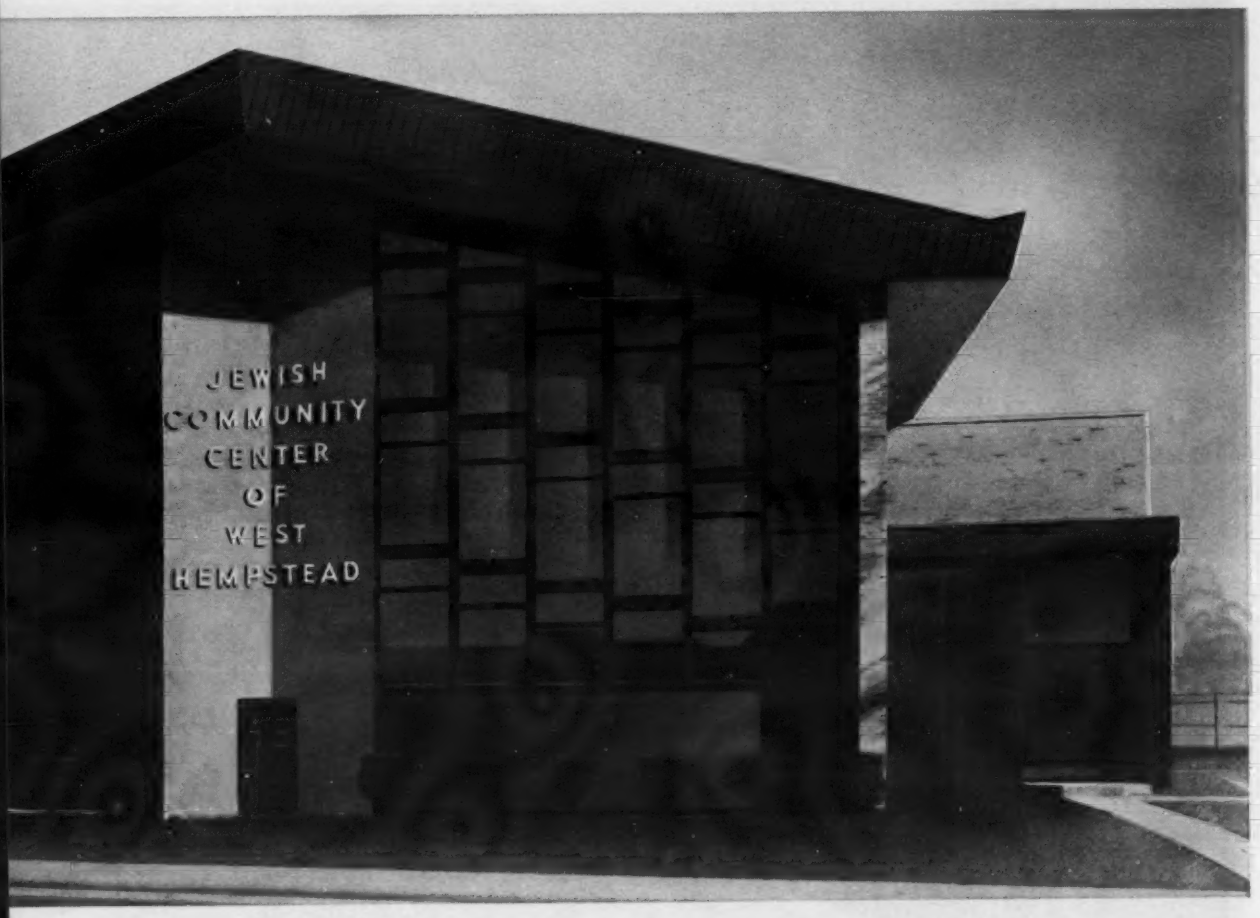
By Frank Klein—Only $1.00 ea. Clip this ad and mail with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.



COMPLETE SYSTEMS FOR EVERY AIR CONDITIONING REQUIREMENT

Tested and certified packaged chillers — *Single and multi-zone air handling units* — *Cooling towers and evaporative condensers* — *Self-contained air conditioners*

Acme
INDUSTRIES, INC.
JACKSON, MICHIGAN

MANUFACTURERS OF QUALITY AIR CONDITIONING AND REFRIGERATION EQUIPMENT SINCE 1919

Some Specific Suggestions on How To Tell the Home Air Conditioning Story

A good example of how the subject of air conditioning the home might be presented to the general public, particularly women's groups, is a talk given recently by Carrier Corp.'s William L. McGrath.

Extracts from his talk are presented in the adjoining report. In his remarks, McGrath reviewed advantages of both central and room air conditioners, gave some advice on selecting a room unit, outlined what central air conditioning is and how it works, and offered some suggestions on how to overcome "I can't afford it" objections.

CHICAGO—In a talk on "Advising the Homemaker About Air Conditioning" at a Live Better Electrically Women's Conference here, William L. McGrath, chief engineer for the Unitary Equipment Div. of Carrier Corp., proposed in a series of make-believe conversations salesmanship approaches to both room air conditioners and centralized residential air conditioning systems, with special emphasis on the latter.

McGrath suggested that "greater comfort throughout the house" was central air conditioning's most persuasive selling point.

Temperature, Humidity Will Be More Uniform

"Temperature and humidity will be more uniform with adequate circulation of conditioned air throughout all rooms. This advantage is not limited to the summer season. A home in which central air conditioning is installed will probably have much better heating. This is true because the distribution system and the central equipment will be designed to provide an adequate air change and the most desirable winter conditions as well."

Central Conditioner's Quietness Stressed

Also appealing, he continued, is the "quietness" factor prevalent in the central unit, where a large slow moving fan circulates the air from equipment located away from the living areas.

"From the standpoint of appearance," he indicated, "the unseen central unit presents distinct advantages over individual units in windows. Maintenance is also far simpler with one unit than with a number located about the house. Room air conditioners sometimes make it difficult to clean windows, provide possibilities of air leakage in cold winter months, and necessitate the handling of numerous air filters at frequent intervals in order to remove the dirt that has been collected.

Superior Air Cleaning

"Superior air cleaning," McGrath points out, "has always been an attribute to the central plant but has become even more important." It is now possible to remove odors and provide air cleansing at the central unit without even the requirement of changing or cleaning filters.

Having firmly established the distinct advantages of a central air conditioning system, McGrath then suggested customer procedure should they be planning to purchase a room air conditioner.

These suggestions included buying from a reputable dealer and choosing a respected brand name, checking whether the dealer has adequate provisions for service, checking the quietness of the unit, and checking the reliability of the equipment —"Will it run on the hottest day of the season?"

Turning to the central system, McGrath said he was going to pretend he was sitting beside a home service department representative as she discusses a variety of situations with typical homemakers. He called the first situation, "So you are building a new house." He suggested saying something like this:

Yearly Owning, Operating Cost Between $125-$150 Above Mediocre Heating

" . . . It may surprise you to know that instead of equipping a home with a mediocre heating system, it is possible to give your family the benefits of real air conditioning for an additional yearly owning and operating cost on the order of $125 to $150 per year.

"It is indeed difficult to imagine an investment that provides more important and lasting benefits.

"A central air conditioning system as the name implies, involves a central core to which all of the air in the house is returned for treatment. Here it can be cleaned continuously and also constantly freshened. It is heated in winter and cooled and dehumidified on sweltering days. . . .

"From the central plant, the air is sent through a duct system to all parts of the house.

"Perhaps it might be helpful to show some typical duct systems.

"In exeremly cold climates, it is desirable during the heating season to neutralize the severe cold transmitted through the walls and windows before it can affect inside conditions. The best way to do this is to sweep the inside surface of exterior walls and windows with heated air. And so we have what is known as perimeter distribution with outlets located under each window. In a home built on a concrete slab, the ducts actually are set into the concrete, warming the slab as well.

"In a home with a basement, the supply ducts pass under the floor and connect with outlets beneath the windows."

Or suppose the location is farther south where winter climates are milder. We might

tell her something like this:

"Overhead distribution may be used. Air may be discharged horizontally high up on interior walls.

"In another type of overhead distribution, outlets are set into the ceiling. It might be used with a central installation in the attic.

Savings In House Design Emphasized

"Usually there are off-setting savings when you install a good air conditioning system—some of which are tied up with the actual design of the house. Therefore, it is important to make this decision early in your planning.

"First, consider windows. They let in light, they let you look out, and they provide ventilation on a hot day. In the air conditioned home they can be fixed and for every window that does not open, screens and storm sash are not needed. They do not have to be placed in every outside wall to obtain cross ventilation.

"Costly wings and offsets are not required to get 'cross-ventilation.' A convenient, compact floor plan gives more interior living space with less expensive outside wall area.

"To reduce the operating cost of the system in summer and winter, the house may be oriented with its long dimension facing south. This cuts down the summer sun. Light colored walls and roofs will also reduce the cooling load.

"Wide roof overhangs act like awnings, shading windows and much of the walls. Windows can be placed to take advantage of the best view and a wall may be located close to the line of a small lot without windows. The benefits are privacy and a larger yard with more freedom for landscaping and recreation."

But, McGrath said, "suppose our home maker shakes her head and the situation changes to one we might identify as: "So you think you can't afford complete air conditioning in your new house."

He continued: "Cheer up," we could say. "All is not lost. We still have some good advice for you.

If You Can't Afford It Now Provide for Its Economical Addition Later

"You can choose the basic heating section of a complete all-year air conditioner in place of a garden variety furnace. This way you will have a system prepared for the easy addition of cooling *and* a substantially better heating system with more adequate air circulation. . . .

"To install a duct distribution system suitable for cooling and the basic air conditioning heater instead of a furnace," he continued, "adds a very minor amount to the initial cost of the house, probably on the order of $50 to $150."

Advantage of Replacing Outmoded Heating Plant

But suppose she isn't planning to buy or build. McGrath suggested telling her this:

" . . . Today it is possible to air condition your home completely for less than one year's cost of owning an automobile. And the air conditioning system will last and last—probably as long as the house. . . . Perhaps you would like to know how we do this in your existing home.

"Do you have a good forced warm air furnace? There are special cooling sections that can be attached to the top of the furnace which will cool the air as it is circulated through the house. It may take a change in the motor that drives the fan and in some cases the fan itself but all of this is a relatively minor problem. We can even add good air purification in the system.

"Perhaps you have an old and somewhat decrepit forced warm air furnace system. Then you are really in luck. You ought to replace it anyway and you can replace it with a modern year-round air conditioner that will give you delightful results.

"Or suppose you have an old gravity furnace. You are still in luck. You can't possibly live with this thing any longer. You will find that you can replace it with a modern year-round air conditioner using much of the duct system that is already installed in the walls.

"In addition to all the benefits of year-round air conditioning, you will get this monster out of your basement.

"Since one thing leads to another, you will soon find yourself making a family room out of it. Or you may discover that you will start enjoying your workshop now that you don't have to crawl around on your hands and knees under the round pipes. . . ."

That's not double talk; it's *straight* talk about the status of Lennox dealers in a Lennox management meeting.

Around this table, policy decisions are made. And dominating every meeting is the conviction that you, the dealer, are "Lennox"—as far as the public is concerned. An awareness of your importance—and our mutual dependence—affects every product, sales and marketing decision.

You see, the main business of Lennox is heating and air conditioning. It is not subordinate to a parade of diverse products foreign to the indoor comfort business. We have no sidelines; your business is *our* bread and butter, too.

For that very good and practical reason, your interests are protected. That's why—although you're not there in person—your "vote" decides every issue.

Wouldn't *you* like to be on this kind of a team? Write or phone your nearest Lennox factory for the full story—without obligation.

LENNOX Industries Inc.

Established 1895

Marshalltown, Iowa • Columbus, Ohio • Syracuse, N. Y.
Fort Worth, Texas • Salt Lake City, Utah • Decatur, Ga.
Los Angeles, Calif. • Des Moines, Iowa

Lennox Industries (Canada) Ltd.
Toronto, Montreal, Calgary and Vancouver

Copeland Appoints Runciman, Perttola

SIDNEY, Ohio — Walter Runciman, former service manager of Brunner Div., Dunham-Bush, Inc., has joined Copeland Refrigeration Corp. as assistant to Glenn Detrick, national service manager.

W. Runciman

Arne Perttola,

A. Perttola

formerly assistant to Detrick, has been appointed manager of field educational services.

Runciman was associated with Brunner for nearly eight years as sales engineer and service manager. He is a graduate of McGill university, Montreal.

Prior to joining Copeland in 1956, Perttola operated a compressor repair and re-building service in Detroit. In his new capacity, he will be responsible for compressor and condensing unit field service and rebuilding procedures.

Herbert C. Noll Dies, Was Pioneer Wholesaler

OMAHA, Neb. — Herbert C. Noll, former owner of the H. C. Noll Co. here, passed away on Feb. 16.

Noll, who retired from active business a few years back, was a pioneer in the refrigeration wholesale business. A former active member of ARW, he established his company in 1928 and represented many of the leading brands of that day.

He is survived by his wife, Pauline.

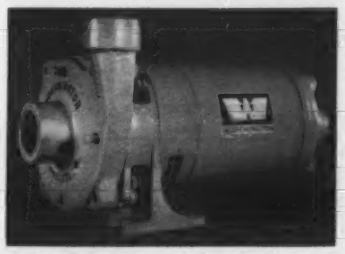
Pocket Capacitor Tester Introduced

● Availability of its new pocket capacitor tester called "Cappy" has been announced by Watsco, Inc., Dept. AH&RN(P), 1020 East 15th St., Hialeah, Fla.

"Cappy is an electronic instrument designed to provide a quick and simple means to test all types of capacitors and condensers, both a.c. and d.c.—all voltages," it was pointed out. "It operates on 115 volt a.c. or d.c., and may be used for testing capacitors which are leaking, grounded, shorted, or open."

Watsco also recommends its use for testing fuses, line voltages, and motor windings, in addition to testing continuity on washing machines, vacuum cleaners, toasters, mixers, lamps, etc.

More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.



Pump Line Features Higher Efficiencies

● Introduction of an "Econobloc" line of pumps, designed for application in the air conditioning industry, has been announced by Worthington Corp., Dept. AH&RN, 401 Worthington Ave., Harrison, N. J.

The pumps, available in six sizes in the fractional horsepower range, deliver up to 80 g.p.m. and heads to 110 ft., according to the company. They feature higher efficiencies, a reliable and easily replaceable mechanical seal used exclusively in the entire Econobloc line, and space-saving compactness of design, it was stated.

Die cast aluminum bronze impellers with shell-molded casings insure smoother waterways, and on the smaller sizes, the mechanical seal can be serviced without disturbing either suction or discharge piping, the company said.

JAYNE MANSFIELD previews the new Norge gas refrigerator (Model CTGI-110). With an automatic ice server, the refrigerator provides a continuous supply of ice cubes. The first gas refrigerator ever built by the Norge Div., Borg-Warner Corp., the two-door model will be on the market this month.

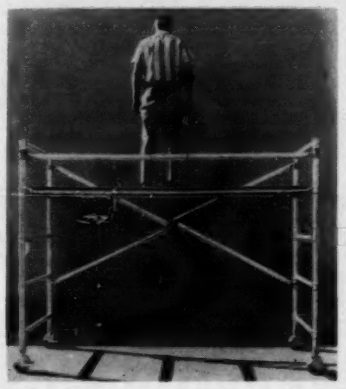
Vibra-Check Claims Simple Installation

● "Vibra-Check," an anti-vibrational material designed to be placed under the base or feet of machines to prevent their transmission of vibration and noise to surrounding areas is produced by Lowell Industries, Inc., Dept. AHRN, Allston Station, Boston 34.

"Vibra-Check is very simple to install," the company said. "No lagging or cementing to the floor is necessary. Creeping or crawling of vibrating machinery is impossible on Vibra-Check pads because of the high coefficient of friction (0.8) and the vacuum suction cup pattern of Vibra-Check's surface. Vibra-Check conforms to rough or uneven floors."

Vibra-Check is described as "a synthetic material composed of two layers of tough vinyl chloride elastomeric resin, bonded to both sides of a strong reinforcing core of monofilament fiberglas. These components are fused under heat and high pressure to form a unit of three layers with three different natural frequencies. The resilient outer layers have a low density, while the hard central core has a high density. The vibrational wave meeting these three layers is isolated or absorbed."

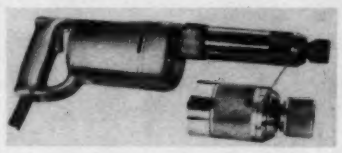
One-Piece Scaffolding Unfolds In Seconds



● Designed without loose braces, nuts, or bolts, a new one-piece scaffold on wheels "unfolds in seconds almost automatically," according to Up-Right Scaffolds, Dept. AH&RN, 1013 Pardee St., Berkeley, Calif.

Two folding V braces snap together and lock automatically to form a rigid X brace joint to support the structure, it was stated.

Ten feet long and 29 in. wide, the scaffold can be erected by one man, the company said. It "rolls through doorways and down narrow aisles." Platform height is adjustable from 1 ft. to 8½ ft.



Variable-Impact Drill Claims Unusual Speed

● A new variable-impact electric drill, 18 in. long and weighing only 10½ lbs., claimed to be capable of sinking a ¾ in. hole 3 in. deep in concrete in 180 seconds, has been developed for use in the building trades and maintenance service, according to Moorhead-Crego, Inc., Dept. AH&RN, 645 S. Green Rd., Cleveland 21.

The heavy-duty unit is said to handle carbides from ½ to 1⅛ in. "with equally spectacular results."

"The variable impact force is derived from one axially-moving part, a spring-loaded hammer cam striking the drill chuck anvil twice on each revolution of the shaft," it was explained.

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- **expanding your territory**
- **taking on new lines—**

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NEW PRODUCTS

These brand-new units open new markets, protect old markets for you!

Heat Pumps—Package and Split-System Models—They heat and cool for year-round comfort!— Both models are factory-assembled and pre-wired, ready to install. The ACPR goes in an attic, basement, crawl-space, transom or central hallway. The Split System consists of the AC-BR Unit (installed outside the house) and the RC-BR Inside Unit (mounted in the duct system), with its self-contained, high-capacity blower. American-Standard Heat Pumps are available in 2, 3, 4 and 5 h.p. A single automatic thermostat provides the desired temperature in both summer and winter, by means of an automatic gas-reversing valve. The units have a De-icing System, which prevents ice build-up, and a Double Drain Pan, which saves you work and money on installation. A Supplementary Electric Heater is available in four capacities—13,648, 27,296, 40,944 and 54,592 Btu—with step-by-step cut-in control of the elements to prevent overloading the power line.

Weather Station—Top-quality comfort control your customers can see!— The American-Standard Weather Station is a profit item that sells on sight! It puts controls and weather instruments all in one visually dramatic package. It prompts home owners to brag about the wonderful heating and air conditioning system *you* installed. The Weather Station is simple to install. Push buttons set the system for heating, cooling or air circulation and filtration only. A clock-thermostat maintains temperature control, with automatic night set-back. There's a warning light that signals when filter needs changing.

Electric Furnaces (Upflow & Downflow)—New-fashioned heating plus traditional quality!— These furnaces come completely assembled, ready to connect to a power supply. They are factory-wired for 82,000 Btu; simple reconnections can reduce capacity by steps down to 41,000 Btu. Each unit comes in two models; one for use with a 2- or 3-ton "add-on" cooling unit, and one for use with a 5-ton "add-on" cooling unit. Both models are compact enough for installation in closet, alcove, hallway or basement . . . with no flue required. And the control panel swings out for easy servicing.

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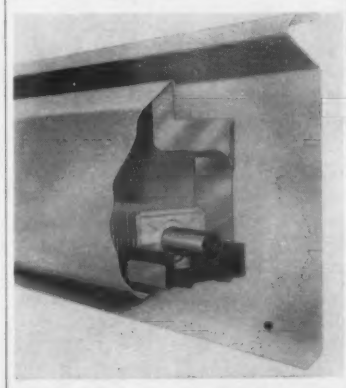

Offers New Perimeter Hydronics Baseboard

● Development of a new perimeter baseboard unit for hydronic heating has been announced by Radiant-Ray Radiation, Inc., Dept. AH&RN, Newington, Conn.

The unit is 8 in. high and comes in 3, 4, 5, 6, and 8-ft. lengths with a complete line of snap-on accessories and trim pieces. A damper with control knob is optional. It is supplied in a baked clam-shell white prime coat on bonderized steel and may be painted to match any interior.

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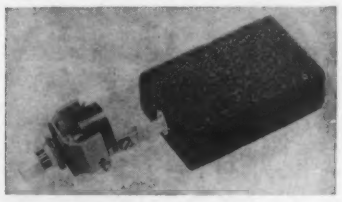


Skuttle Introduces Simplified Valve

● Development of a new type of float valve which operates on a single pivot principle has been announced recently by Skuttle Mfg. Co., Dept. AH&RN, Milford, Mich.

Called the A-1106-9, the valve "is simplified to the point that there are no moving parts," the company said. "The all rubber valve seat is adjustable and can be reversed.

"The unique design of the valve seat enables it to act as a splash shield, and is easily replaced. Another feature is the chrome plated valve jet that assures positive shut-off."

The manufacturer recommends this valve and foam glass float assembly for evaporative coolers, ice making machines, and other automatic water control operations.

Expansion Absorber Is For Wet Heat Systems

● A new bellows type expansion absorber for all wet heat systems is being manufactured of hydrostatically formed bronze bellows with a copper sleeve and copper male tube ends by Cobra Metal Hose, Dept. AH&RN, 5059 S. Kedzie Ave., Chicago 32, it has been announced.

A hygroscopic seal that blocks out foreign matter and seals in moisture collected on the bellows is a special design feature located at the ends of the sleeve of the expansion absorber.

The absorber is available in ¾, 1, 1¼, 1½, and 2 in. i.d. Movement of ½ in. is provided, according to the company.

Two-Zone Plenum Said To Reduce Costs

● A factory-assembled two-zone plenum section for use with forced air heating or cooling systems has been introduced by Ryniker Steel Products Co., Dept. AH&RN, Box 1932, Billings, Mont.

Known as "Zone-Pak," the new system "offers substantial savings to heating contractors by simplifying installation and cutting material costs of two-zone systems," the company claims.

The unit consists of a Minneapolis-Honeywell damper actuator that operates twin pairs of dampers—one pair for each zone. All linkage assemblies are heavy-duty and dampers ride in friction-free bushing type bearings, it was stated.

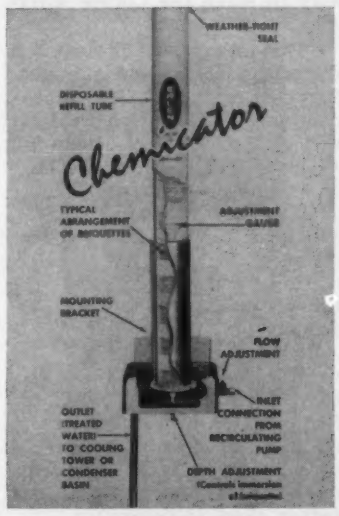
The unit is shipped complete and assembled.

'Chemicator' Said To Balance Chemical Treatment

● The "Chemicator," said to be a new concept for feeding balanced chemical treatment into circulating water systems of cooling towers and evaporative condensers, has been placed in national distribution by Erlen Products Co., Dept. AH&RN, Burbank, Calif.

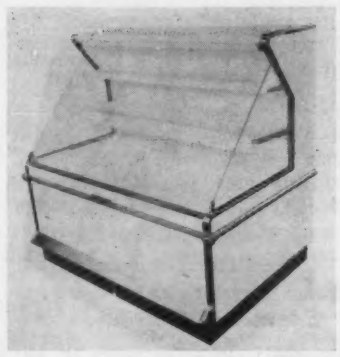
The Chemicator is a small, lightweight, closed reservoir, mounted on the side of the equipment, through which a portion of the recirculating water flows. On the upper portion of the Chemicator a sleeve holds a weather-sealed plastic tube containing a sequence of variously formulated compressed chemical briquettes.

These are made of polyphosphates and organic chelates to remove and prevent the formation of scale, organic corrosion inhibitors to remove and prevent the formation of rust, together with automatic pH, algae and slime controls, the company said.



The Chemicator (patent pending) sells for about $20 to users of Erlen Chemical Briquettes.

McCray Introduces 5-Ft. Merchandiser



● A new 5-ft. self-contained merchandiser for the display of meat, dairy, or produce items in restricted locations or at the end of gondolas, has been announced by McCray Refrigerator Co., Inc., Dept. AH&RN, Kendallville, Ind.

This merchandiser has two adjustable wall shelves and a bottom compartment for bulky items. Adjustable wire shelves for this compartment are optional. Plexiglas wings on each end of the case act as shelf retainers and afford product visibility "from from any location." Fluorescent lights are located in the top of case and under lower wall shelf.

A 1-hp. compressor in the bottom of the case supplies refrigeration. Lower section of the front panel is hinged so that the compressor, which is on a slide base, can be pulled out for servicing. Defrost water drains into self-evaporating pan in the compressor compartment.

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

BEFORE YOU BUY, THINK:

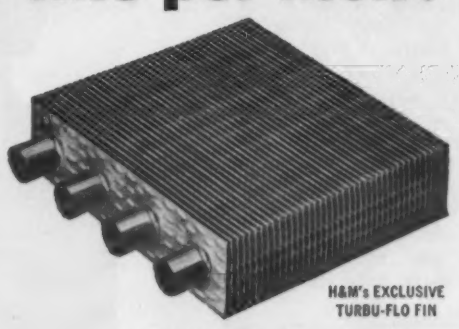
Do you need 6, 7, 8 or 10 fins per inch?

Halstead & Mitchell supplies Turbu-Flo Coils with the fin spacing you want

Why accept someone else's "standard" when your own judgment dictates another fin spacing for the specific job at hand. Now you can call on Halstead & Mitchell for Turbu-Flo coils with 6, 7, 8 or 10 fins per inch to meet your individual size requirements.

H&M makes coils for use with most refrigerants, steam (standard or non-freeze coils), hot or chilled water. All coils are available from 1 to 8 rows deep, with finned heights of 12 to 36 inches, and finned lengths up to 10 feet. Aluminum fins on seamless copper tubing are standard, though copper fins may be ordered. Casings come in heavy gauge galvanized steel or aluminum, with connections for left or right hand.

When perfect performance depends on correct design, specify H&M coils. Ask your wholesaler for complete information or write to Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.



H&M's EXCLUSIVE TURBU-FLO FIN

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Finned Coil Products • Air-Cooled Condensers • Water-Cooled Condensers • Cooling Towers

Air Force Program To Upgrade Engineers -

(Continued from page 1)

cipate in their respective professional organizations, while air conditioning and refrigeration mechanics are being urged by Gen. Minton to join the Refrigeration Service Engineers Society.)

There are several other avenues being explored in this upgrading program, which will be mentioned later.

Benefits to Air Force Engineer Cited

Immediate benefits to the individual Air Force engineer from registration and participation in society activities may be little more than personal satisfaction, but the long-range picture could mean benefits for that extremely vital organ — the pocketbook.

For one thing, the individual registered Air Force engineer would probably be selected for promotion over the non-registered engineer.

Secondly, engineers in the Air Force and other branches of the Federal government are hoping to see passage of a bill (HR 2,200) which would establish a separate system of classification and compensation for scientific and professional employes.

This could mean that the engineer could conceivably improve his income without abandoning engineering in favor of a higher-paying administrative position. Air Force engineers rather think that a great many engineers in private industry will enthusiastically back this thought.

Negative Incentive For Upgrading Cited

In addition to these positive benefits, there is a somewhat negative incentive for the upgrading program.

The advent of the missile as a weapon represents a truly revolutionary approach to defense and warfare, and it is likely to have a profound effect on the Department of Defense, especially the Air Force. By the same token, the missile will probably make its presence felt, perhaps in a negative way, in the industry.

Unlike an airplane, a missile does not require maintenance and repair. Once it leaves the launching pad, the missile has had it. It is literally a one-shot proposition. There's no need, or opportunity even, to stop a missile for periodic inspection and maintenance of its power plant or "airframe" after X number of hours of flight.

Ultimately, it would seem that the military airplane would be relegated to the position of transporting personnel and parts rather than being a weapon in itself. When that happens, what will become of the tremendous organization and plant that the Air Force now requires to keep its planes flying?

The Air Force engineers therefore hope to get the responsibility of equipping and maintaining the missile bases.

(The new missile bases will, of course, require air conditioning, heating, and refrigeration, but whether the over-all total requirements will approach that now required for present Air Force installations is questionable.)

"We in the engineering profession must be prepared to keep pace with the rapid breakthrough in scientific fields," Gen. Minton also told the National Society of Professional Engineers at its recent winter meeting.

Sees Revision In Engineers' Standards

"Many, perhaps most, of our standards of criteria will have to be revised or discarded.

"We cannot expect to be considered a profession in the eyes of our fellowmen if we are content to stay in the brick and mortar business," the general said. "We must accept each new scientific break-through as a challenge and take the initiative in developing the engineering environment that is necessary to make the system workable.

"This situation presents a difficult problem for the professional engineer," Gen. Minton continued. "It is particularly difficult in view of mounting evidence that the tools we have as engineers to attack such a problem are becoming blunter. What are those tools? I believe the most important are prestige, stature, self-respect, and the other elements of a true profession.

"All the indications point toward a lessening of these factors in engineering," declared Gen. Minton, who referred to lowered enrollments in schools of engineering and the increasing emphasis today on scientists rather than engineers.

To implement his "professional development program" the general some months ago established a Civilian Advisory Committee from among personnel in the Directorate of Civil Engineering at Headquarters, U. S. Air Force.

Members of this committee include Jack Amatt, C. W. Anderson, D. L. Black, T. J. Buntin, L. B. Crowley, Leon Julius, B. C. Meredith, and William T. Smith.

Although many of the engineers in the Air Force are military officers, civilians were chosen for the committee because their assignments are usually more permanent in nature, in contrast to the officer who is usually given a new "tour of duty" every three or four years.

5 Panels Set Up

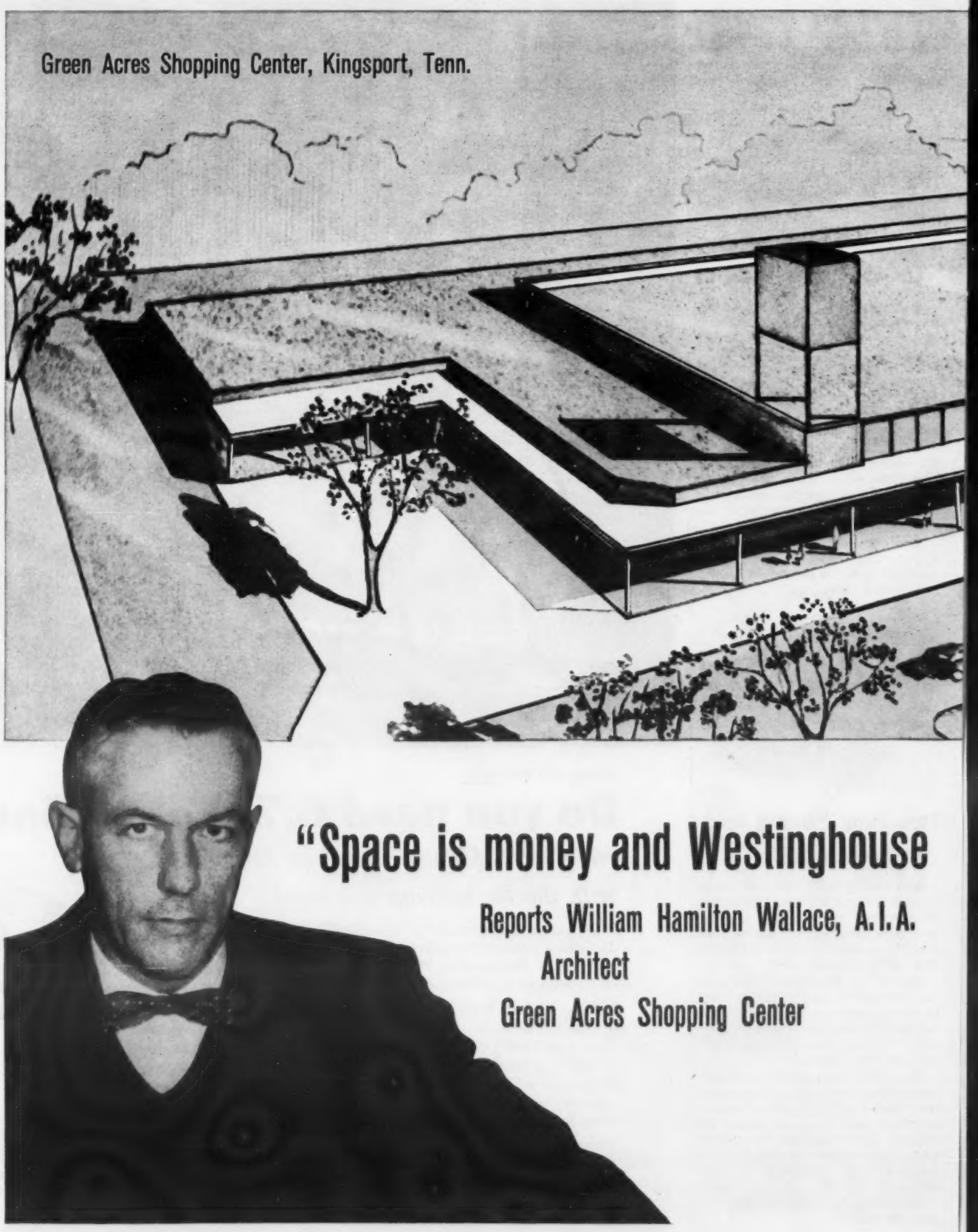
The advisory committee functions largely through the panel system. Five panels have been established thus far: electronic data processing, education, professionalism, technical operations, and public relations.

Under the chairmanship of Amatt, the electronic data processing panel is exploring means of transferring as much routine data and record-keeping to EDP as possible.

"Our aim is to eliminate detailed search of documents by engineers," Amatt explains. "Primarily this would relieve project engineers of much manual research and leave more time for engineering."

Even now, of course, the Air Force employs EDP quite widely, but this panel hopes to expand its use greatly.

The education panel, headed by Crowley, is charged with assembling, evaluating, and summarizing courses of instruction, group participation classes, self-help, and correspondence courses, and other media to improve the professional stature of Air Force Engineers.


Green Acres Shopping Center, Kingsport, Tenn.
"Space is money and Westinghouse
Reports William Hamilton Wallace, A.I.A.
Architect
Green Acres Shopping Center

Recently a few educators from various engineering colleges were taken on inspection trips to Air Force installations to show the unusual engineering problems often encountered with the hope that this information could have a bearing on types of material included in engineering courses.

Professionalism Panel Strives To Enhance Engineers' Prestige

The professionalism panel is chairmanned by Anderson, who explains that "the main purpose of our panel is to do everything to enhance engineers' prestige by encouraging them to become registered engineers."

This panel encourages and assists architects and engineers to apply for registration and to join and become active in professional and technical societies. Panel members have application forms available to guide and assist those seeking registration and society membership, and the panel members devote a considerable amount of their own time to explaining procedures and coaching candidates.

This activity is extended to civilian and military Real Property officers, who are encouraged to obtain membership in the American Institute of Real Estate Appraisers, a prerequisite for which is the completion of two real estate appraisal courses.

Effectiveness of this effort, which actually got under way before the formal establishment of the Civilian Advisory Committee, shows up in some statistics released by Capt. Bruce L. Eberhart, public information officer of the Directorate of Civil Engineering.

Between 1958 and 1959 there was almost a 100% increase in the number of architects and engineers employed by the Directorate at Hq USAF who were registered, these figures show.

Rate of 50% Registered Engineers Being Boosted

"At the present time nearly 50% of the civilian and military architects and engineers employed by or assigned to that office are registered, and the number is increasing each month," Capt. Eberhart says.

Similar increases have occurred in the major air commands and regional civil engineer offices, he adds.

There has also been a 75% increase in number of memberships in professional and technical engineering societies.

Incidentally, one of those who contributed to the increase in registered personnel was Gen. Minton himself. An engineering graduate of the University of Illinois with a master's degree from Harvard, Gen. Minton found time to meet the requirements of registration in recent months.

Just as active in support of the program is Brigadier General Robert H. Curtin, deputy director for civil engineering operations, USAF, who holds a master's degree in civil engineering from Harvard.

Organizational Chart Lists Professional Status of Individuals

As a concrete example of how the Air Force is promoting this upgrading program, one could cite the large bulletin board that hangs in Gen. Curtin's office in the Pentagon.

This is primarily an organizational chart listing key personnel in the Directorate. Carefully posted after each registered engineer, architect, lawyer, or real estate appraiser, are letters showing his professional status, even if the individual has merely applied for, or is training for, professional registration.

"We've made no issue of the board," comments Gen. Curtin, "but it does instill interest. It's very important to provide incentive and interest in a program of this type."

The board (and the program) have some immediate practical value, however, Gen. Curtin indicates.

"Individuals who have obtained registration would get first consideration for a promotion, all other things being equal," he emphasized.

Gen. Curtin also goes on to comment that "the engineering element of the Air Force has been more involved in management—staff actions—than just engineering, in contrast to engineers in the Army and Navy."

Panel Supports Bill To Reward Professional Men

Another facet of the professionalism panel's activities involves interest in, and support of, HR 2,200, a bill before Congress that would establish a system for the classification and compensation of scientific and professional positions in the government.

This bill would take 61 series of professional positions out of the General Schedule series and put them in a Scientific and Professional Schedule, converting the present GS grades of 5 through 18 into 14 SPS grades and providing substantial pay increase. Twenty-five of the 61 series are in engineering.

Fourth panel of the Air Force Civilian Advisory Committee concentrates on Technical Operations. This panel is chairmanned jointly by Buntin and Meredith. One of the primary objectives of this panel is the coordination of Air Force participation in engineering and professional society and industry meetings through exhibits and speakers.

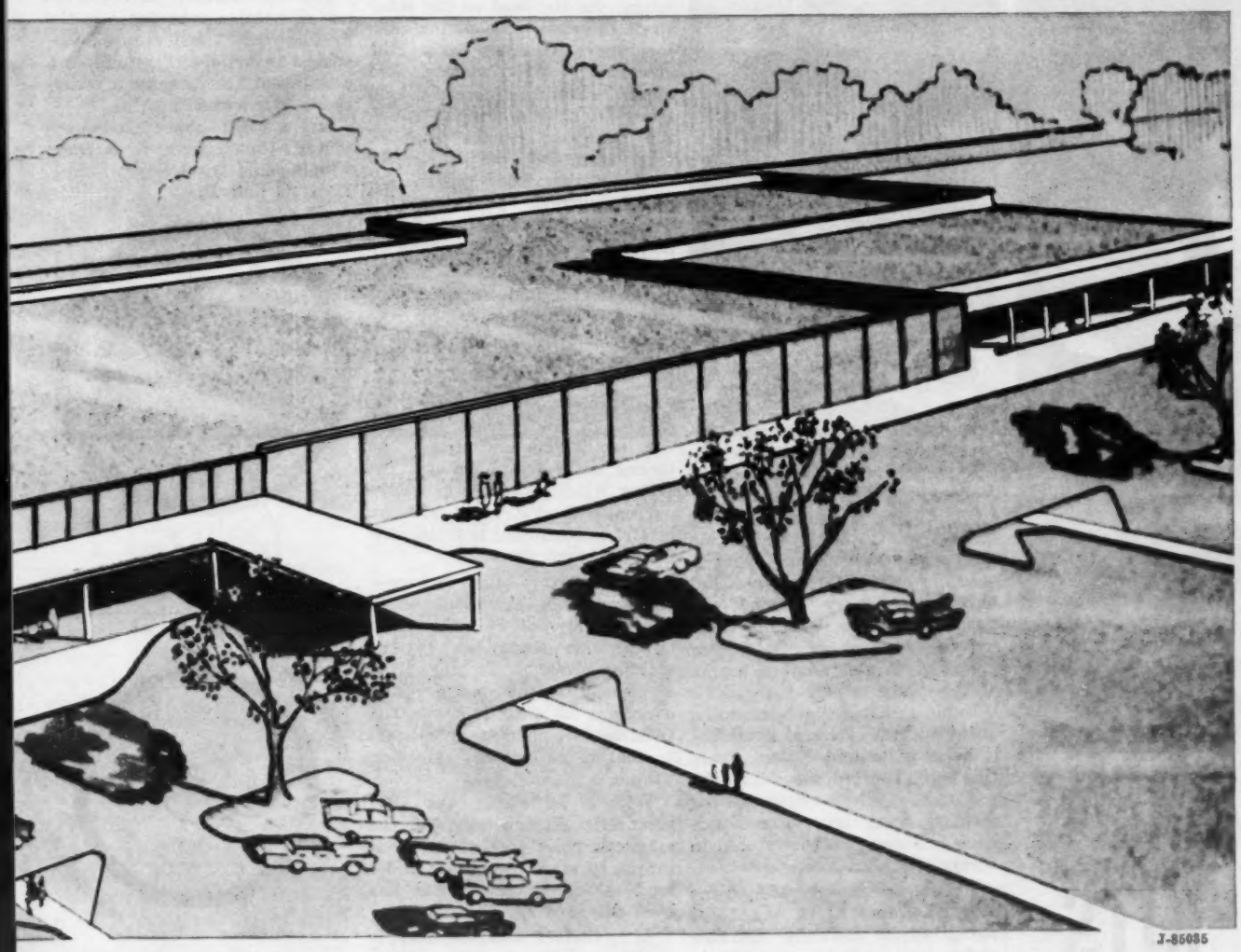
Preparation of exhibits to show graphically what Air Force engineers are contributing to the engineering profession generally is a prime responsibility of this panel.

To Encourage Engineers To Share Knowledge

Equally important, this panel is currently engaged in a survey of USAF engineers to determine possibilities of technical papers that these individuals would be eminently qualified to present before various society meetings. There is a wealth of knowledge and experience represented in the practical problems faced and solved by Air Force engineers in many fields.

Heading up the fifth panel on Public Relations is William T. Smith, well known in air conditioning and refrigeration circles. Besides the obvious areas of public relations, this panel is responsible for the encouragement of writing of technical articles by USAF engineers.

One of the first things this panel did was to prepare a leaflet outlining basic approaches and methods of writing technical articles and getting them published. This leaflet could well be taken to heart by many who submit such articles to trade and engineering publications.



J-85085

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Air Conditioning Specialist:
Johnson – Hilliard, Inc., Kingsport, Tennessee

"In a shopping center, every square inch of floor space has a dollar value. I chose Westinghouse split-system heat pumps because of their money-saving flexibility which permitted out-of-the-way roof installation. Not one square inch of floor space was taken up with any of this equipment enabling us to design with more economy and give the tenants what they wanted."

Westinghouse heat pumps provide year-round heating and cooling. Both the indoor and outdoor sections of the heat pumps are installed on the roof. The indoor sections are enclosed in an insulated aluminum casing. The short supply and return ducts are also insulated minimizing duct loss. Long runs of supply and return duct were eliminated by locating the units directly over the areas being conditioned.

The flexibility of Westinghouse split-system heat pumps installed by trained air conditioning specialists is another example of Westinghouse q|s|p* in action. On your next air conditioning job, call Westinghouse.

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WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV ALTERNATE FRIDAYS

TECH CENTER

by Frank J. Versagi, Technical Editor

Applied Electrical Theory (Part 14)

Induction Motors (b)

The nominal speed of rotation of an induction motor is controlled by 1) characteristics of the electrical power supply, especially its frequency (in cycles); 2) the number of poles per phase in the motor.

A short series on metering devices—capillary tubes, expansion valves—will follow completion of the articles on Applied Electrical Theory.

The spacing and arrangement of the stator windings determine the number of poles per phase. In Fig. 1a, there are four poles, each segmented and laminated for reasons which will be explained later. Sometimes the separate poles are not so easily identified. In Fig. 1b, for example, the spacing and arrangement of the windings establish the separate pole pieces even though the core, itself, may be an integral assembly.

FIGURE 1a

FIGURE 1b

If the motor has two poles per phase, its nominal speed of rotation will be 3,600 r.p.m., the same speed as that of the 60-cycle alternating current generator which supplies the power. A 4-pole motor will rotate at 1,800 r.p.m.; a 6-pole motor at 1,200 r.p.m.; and an 8-pole motor at 900 r.p.m. (For a 60-cycle current, there are 120 half-cycles every second, or 7,200 per minute. Dividing 7,200 by the number of poles per phase gives the nominal r.p.m. of the motor.)

Table 1 shows the r.p.m. to be obtained from several combinations of poles and cycles. From this table can be determined the reason that motors designed for 60-cycle operation do not produce full power when placed in 50-cycle applications.

Actually a motor rarely runs at its nominal r.p.m. An 1,800 r.p.m. motor actually operates under load at between 1,725 to 1,750 r.p.m. The percentage difference between the nominal or synchronous r.p.m. and the actual speed of rotation is called **slip.** The smaller the slip, the closer the rotor speed approaches the stator field speed. Odd speeds, like 853 r.p.m., are the result of total slip due to design of the motor and such factors as friction and air resistance, on the specific application.

Table 1—Rotating Field R.P.M. for Various Motors

	Poles Per Phase					
	2	4	6	8	10	12
	RPM	RPM	RPM	RPM	RPM	RPM
60-Cycle Motor	3,600	1,800	1,200	900	720	600
50-Cycle Motor	3,000	1,500	1,000	750	600	500
40-Cycle Motor	2,400	1,200	800	600	480	400
25-Cycle Motor	1,500	750	500	375	300	250

Because of such factors, the rotor is never quite able to catch up to the rotating magnetic field in the stator.

One advantageous characteristic of induction motors is their ability to regulate their own speed, within a limited design range. **As the load on the rotor shaft increases, the motor calls for more current and the strength of the rotating field increases.** As the increased load tends to slow down the rotor, the rotor cuts more lines of force from the newly strengthened rotating field, and the induced current and resulting rotor magnetic pole strength are increased, so the rotor keeps up to speed.

Should the load on the motor exceed the capacity of the motor, the rotor will stall—a condition called **locked rotor.** Under such a condition, an overload protector (see article 6) will open the circuit. If not, the heavy current drawn on locked rotor will **burn out** the stator windings, since excessive current always overheats an electrical conductor not designed for such amp draw.

Some of the same factors—friction, load, air resistance—which contribute to slip in a motor also contribute to the starting problem. To start from a standstill, the motor must overcome all such factors. The twisting force necessary to start a motor is termed **starting torque.**

With a 3ϕ motor, the 120° geometric displacement of the magnetic poles creates sufficient torque to start the motor under load—assuming the motor has been designed for the load.

In 1ϕ motors, however, there is no inherent displacement of the magnetic poles so it is necessary to create the displacement and thus a starting torque. Indeed, the first single phase motors had to be set in motion manually or mechanically (as the old fashioned electric clock) after which they would run adequately under load.

The starting problem for single-phase motors is normally solved by **splitting the phase**—in essence creating a two-phase current during startup. This is best accomplished by creating two a.c. circuits and shifting the current in one of these circuits behind or ahead of the other.

One way to shift the current in one circuit behind that flowing in the other is through the use of greater inductance in the first circuit. Inductance, discussed in article 12, produces a counter-emf and causes a resisttance to current flow.

In a split-phase induction motor, then, there is a **main winding** and a starting winding, Figs. 2a and 2b.

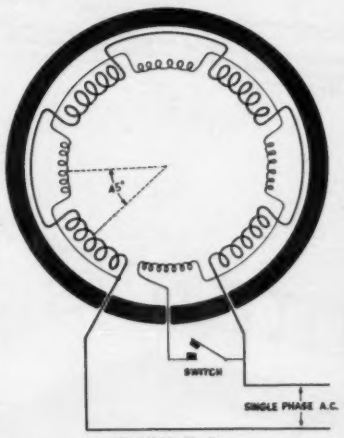

FIGURE 2a

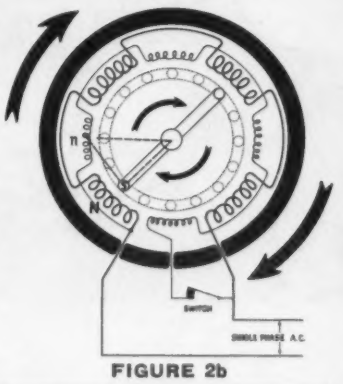

FIGURE 2b

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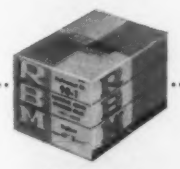

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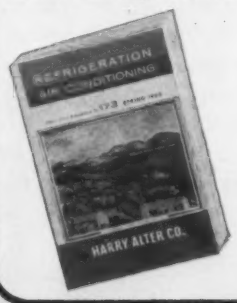

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The starting winding, or phase winding, contains more turns and thinner wire than does the main or running winding, and is physically displaced from the main winding. Both windings are connected in parallel across the 1ϕ, a.c. line.

Acting essentially as a 2ϕ device, the motor starts under influence of the displaced magnetic poles. When the motor reaches about three-fourths of its rated speed, a relay or switch mechanism opens the circuit to the starting windings and the motor continues to operate on its running winding only. This type of single-phase motor is called an **inductance start, split-phase motor.** Since pure resistance is often added to the start winding to increase the phase difference, this type of motor is sometimes called a resistance-start motor.

Another method of splitting the phase is to place a capacitor in series with the starting winding, Fig. 3.

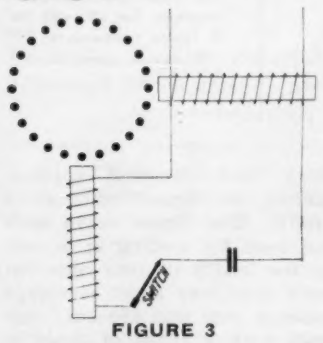

FIGURE 3

By its action, to be described later, the capacitor makes one coil magnetically strong earlier than the other, thus creating a temporary 2ϕ condition which starts the motor. Again, a switch or relay cuts out the starting winding at about three-fourths speed from where the motor can operate on running torque alone. The effect of the capacitor is to **advance** the current in the starting winding, whereas in the induction start motor, the current is **retarded** in the starting winding. In either case, the geometric displacement of poles is effective.

A motor like that just described is termed a **capacitor-start,** split-phase motor; it is sometimes called a capacitor-start, induction-run motor. This motor gives good starting torque

If the starting load is moderate, it is possible to use a **permanent split capacitor motor,** Fig. 4. Here the capacitor serves the same starting function but it is not disconnected from the line when the motor reaches running speed. Instead, running winding, starting winding, and capacitor stay in the circuit during both starting and running.

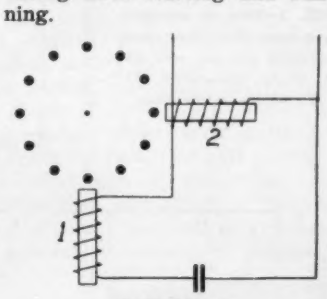

FIGURE 4

Still other single-phase motors use two capacitors in parallel. At ¾-speed, the starting capacitor is cut out of the line; both stator windings and the second capacitor continue to function. This is called a **capacitor start, capacitor run motor.** (Capacitors will be discussed at another time.)

For applications having a very low starting load and a relatively low running load, the **shaded pole** motor is very suitable. Self-starting, shaded pole motors require no starting relay, no extra phase or starting winding. Instead, each pole is notched to form a smaller pole around which is a shading coil —actually a heavy copper ring not connected electrically in any way, Fig. 5.

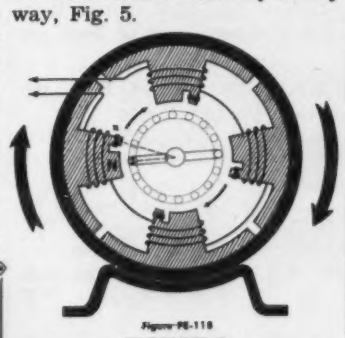

FIGURE 5

The shaded pole acts as a starting or phase winding. But the shaded poles are much weaker than a phase winding pole would be and they are much closer to the larger pole than is true in the usual split phase motor. As a result, starting torque is low. Shaded pole motors are easy to stall—a fan motor can be stopped with the fingers—but on a 1/80-hp. or smaller motor, the locked rotor current is only slightly higher than running amp draw and will not burn out the windings even in continuous stalled condition.

In the motors so far discussed, the a.c. power is fed only to the stator. The **repulsion-induction** motor in which the rotating member is an armature, rather than a rotor, is so constructed that when a circuit to the motor is completed, the power takes **two parallel paths** through the motor.

One path is through the stator windings where it establishes the rotating magnetic field. The second path is through brushes and a set of commutator segments where a circuit is completed through the armature loops, thus producing the necessary magnetic field in the rotating member. Because of the parallel flow of current, the magnetic fields around the loops and the stator coils, some 15°-20° away, have the same polarity and the repulsion between these like poles provides the starting torque.

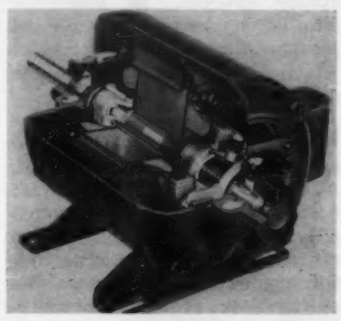

FIGURE 6

When the repulsion-start, induction-run motor reaches about ¾-speed, a brush lifting device raises the brushes off the commutator. Simultaneously, a short circuiting necklace expands against the commutator segments, in effect closing the ends of all the loops. With closed loops, the armature is converted into a rotor and continues to rotate as does the rotor in any single-phase induction motor.

One last type of motor of interest is the **universal motor** so called because it will operate off either alternating or direct current. In this motor, the stator or field winding and the armature winding are **in series** and the same current passes through each. The universal motor is used only on light loads such as sewing machines and vacuum cleaners.

Direct current motors are essentially d.c. generators operating off d.c. power fed in through the brushes. An actual d.c. generator will operate as a motor under such conditions. The chief advantage of direct current motors is their ability to operate at continually variable speeds as opposed to the increment, 2-3 step, speed variation possible with a.c. motors. Where there is need for such smooth speed control, a **rotary converter** may be used to change line a.c. to direct current for the d.c. motor.

file guide—ELECTRICITY: motors

Next: A LOOK AT SOME INDUCTION MOTORS

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Michigan State University Study

Refrigeration Losses Through Open Doors And Conveyor Passes (1)

Robert M. Williams, T. I. Hedrick, Carl W. Hall
Departments of Dairy and Agricultural Engineering, Michigan State University

A study was conducted at the Michigan State University Dairy Plant to determine the actual cost per door opening, to develop, or to modify techniques for reducing these losses, and to evaluate existing refrigeration saving devices now on the market.

EXPERIMENTAL PROCEDURE

Commercial facilities used in this study were those of the Michigan State University Dairy Plant. This plant had two wholesale trucks, two retail trucks, and a vending truck loading out of the cooler. Conveyors were used for moving the milk in and out of the cooler and the regular doors were used only as access doors.

Experimental work of determining refrigeration losses was conducted with a small cooler used solely for this study. This enabled closer control of variable conditions than would have been possible if the test had been conducted with a cooler in regular use. During the test period no products were stored in the cooler, thus no demand was made on the refrigeration system for the cooling of other products.

The experimental cooler had the following specifications, an enclosed blower evaporator with a 1 ton capacity at a temperature difference of 10° F. was mounted on the ceiling. The dimensions of the room were 11 by 7 by 9 ft. with a total of 693 cu. ft. and had one access door opening to the pilot laboratory. The cooler was bounded on three sides by coolers which were held at comparatively constant temperatures, 38° F.

Copper - Constantan thermocouples were used to measure temperature fluctuations inside the cooler. Temperature recordings were made on a M. H. Brown Electronik Recording Potentiometer, model number 153x65712xX-2F, range -100° F. to +250° F.

Outside temperatures were measured by nine thermocouples attached to a wooden frame in rows of three at 6 in. above floor, 39 in. above floor, and 78 in. above floor.

Relative humidities inside and outside the cooler were determined with a sling psychrometer prior to each collection of data. The velocities at which air was moving into or out of the cooler were determined by timing the flow of smoke through a 4-ft. glass tube. A stop watch was used for the timing process. In some instances it was impossible to measure directly the velocity at which air was moving into the cooler.

Where the smoke gun-glass tube method was not practical a vane anemometer was used. A comparison of down draft velocities to determine the most effective size of opening in an air duct and to determine uniformity of air flow across the entire door required measurement by vane anemometer. All refrigeration losses reported are given as rates of loss, in terms of B.t.u. per minute.

A count was made of the number of times per day the doors of the dairy plant milk cooler were opened. A stop watch was used to determine the length of time the doors remained open. Conveyor pass doors were included in this count and were considered as open any time the metal flaps inside the passes were not closed. Tests were conducted to determine the losses through open doors both with the circulator fans on and off.

Conveyor passes were located 10 to 30 in. above the floor. Tests were conducted at both levels to determine if position in the wall was of significance in the refrigeration losses through conveyor passes. The experimental conveyor passes were constructed by cutting a 20 in. by 36 in. opening in a polyethylene wall.

THREE TESTS CHECKED EFFICIENCY OF EXISTING DEVICES

Three tests were designed to check the efficiency of existing devices for reducing losses, and to modify or develop ideas for controlling losses of refrigerated air. The efficiency of a refrigeration curtain which could be hung in the doorway to allow personnel passage while controlling air losses was checked. The curtain tested was a 16-oz. curtain impregnated with Neoprene.

Efficiency of rubber strips suspended in conveyor passes to reduce losses was studied, using an ice cream hardening room conveyor pass. Two-inch rubber strips placed in two overlapping rows were used in the experiment. An ice cream hardening room was maintained at -20° F., in which diffuser type evaporators were being employed.

Altering the air blast from the circulator fan which blew directly toward the door was another test made by constructing an 18 by 21 by 84-in. duct. The wooden frame of the duct was covered with polyethylene. Fig. 1 illustrates the diverted air flow system.

The operating time required by the compressor to maintain desired temperatures under regular conditions was compared to operating time when the various refrigeration-saving techniques were used. The comparison was based on the number of cycles shown by the cooler recording thermometer for a given period of time under each operating condition. The cooler was maintained at 34° F. to 40° F. throughout the test series with ammonia being delivered at a 10° F. differential. All heat loss calculations were based on the following formula:

$$\frac{\text{B.t.u.}}{\text{min.}} = (\text{S.H.}) \left[\frac{\text{lb.}}{\text{min.}} \right] (t_1 - t_2)$$

B.t.u. / min. = Heat flow, British thermal units of heat per minute.

S.H. = Specific heat, B.t.u. per lb. per ° F.

lb. / min. = Air flow rate, $\left[\frac{\text{lb.}}{\text{cu. ft.}} \right] \left[\frac{\text{cu. ft.}}{\text{min.}} \right]$

$(t_1 - t_2)$ = Arithmetic temperature difference, ° F.

All dollar values of refrigeration losses were based upon Hall's (1) refrigeration analysis cost of $0.06 per hour per ton of refrigeration. This figure was for a highly efficient refrigeration system and applies only for milk coolers. Low temperature systems are more expensive.

EXPERIMENTAL RESULTS

The two doors of a milk cooler in the Michigan State University Dairy Plant were opened an average of 267 times during an eight-hour day. This was 33 openings per hour or one opening about every two minutes. Each door received approximately an equal amount of traffic. The access doors were not used for loading in or out, so the length of time open for each door was short. Average passage time was about 5.3 seconds with a range of three to 10 seconds, Table 1.

Load-out conveyor doors remained open from 4 to 9 hours per day, averaging 6.5 hours. Load-in doors ranged from 6.0 to 7.5 hours open with an average time of 6.8 hours. Results for conveyor door counts appear in Table 2.

Results of 22 trials indicated a rate of loss ranging from about 700 to 1,000 B.t.u. per min. with standard blower type circulator fans and standard open doors of 42 by 78 in. These results were calculated on the basis of 38° F. cooler temperature, 77° F. outside

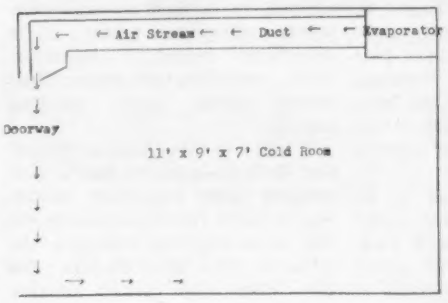

FIG. 1—Construction of diverted air flow.

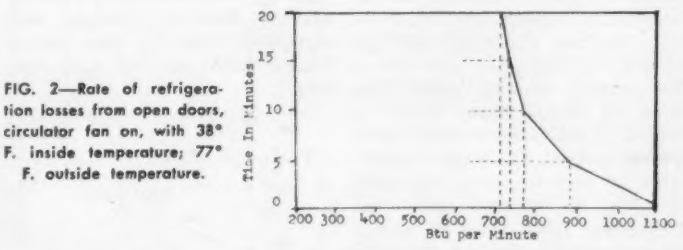

FIG. 2—Rate of refrigeration losses from open doors, circulator fan on, with 38° F. inside temperature; 77° F. outside temperature.

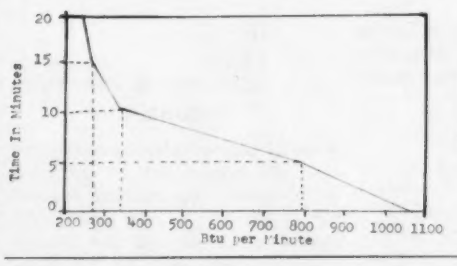

FIG. 3—Rate of refrigeration losses from open doors, circulator fan off, with 38° F. inside temperature; 77° F. outside temperature.

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Table 1—Number and Length of Time of Opening of Doors

Test	Times Opened No.	Average Time Per Opening Seconds	Total Time Open Minutes
1	250	5.0	21
2	267	4.5	20
3	279	6.7	31
4	274	5.2	24
		Average 5.3	
		(Range 3 to 10 sec.)	

Table 2—Length of Time Conveyor Doors Were Open

Test	Total Load-out Time Hours	Total Load-in Time Hours
1	4	6.5
2	6	6.0
3	7	7.0
4	9	7.5
	Average 6.5 hours	Average 6.8 hours

Table 3—Air Flow Velocities Through Open Doors Into Cold Rooms

Time, Mins.	(Feet Per Minute) Circulator Fan On	Circulator Fan Off	Diverted Air Flow
Start	160	177	88
5	160	177	88
10	160	133	88
15	160	124	88
20	160	124	88

* * *

temperature, and 45% relative humidity.

At outside temperatures of 82° F. with 60% relative humidity, the upper extreme of, rate of heat loss reached 1,500 B.t.u. per min. When fans were turned off while the doors were open, from 11 trials the rate of loss average from 200 to 1,100 B.t.u. per min. Losses from open doors with circulator fans on and off are recorded in Figs. 2 and 3.

In the heat formula 0.24 was used for all specific heat values of the air. The weight of air was based on 77° F., at 45% relative humidity, 13.7 cu. ft. per lb., velocities of 160 f.p.m. with the circulator fan on and 177 f.p.m., for the first five minutes, when the circulator fan was off. Area of loss for both was 8.7 sq. ft. of doorway. Table 3 gives the air velocities obtained with the fan on, off, and with the diverted air flow.

(To Be Continued)

Victory Metal Adds To Storage Area

PLYMOUTH MEETING, Pa. —A Raymond, president, Victory Metal Mfg. Corp., maker of "Sta-Kold," "Sno-Queen," "Vimco," and "V-Line" refrigerators, has announced that his company has added 11,000 sq. ft. of storage area in order to handle increased volume.

"Victory, which enjoyed the greatest sales in its history in 1959, has added new machinery and equipment necessary to take care of the continuous demand created by its products in the food service industry," the announcement said.

Brewer-Titchener Announces Election Of Company Officials for Coming Year

CORTLAND, N. Y. — The board of directors of The Brewer-Titchener Corp. has announced the election of company officials for the coming year.

Newman Pearsall, president of Pearsall & Co., of New York City, has been elected chairman of the board. In this position, he will serve in an advisory capacity to the active officers of the corporation.

Edward R. Brewer, vice president since 1954, has been elected president. He succeeds the late James H. Greene, who served as president from 1951 until his death on Feb. 1 of this year.

The post of executive vice president was filled by Harold J. Flinn. Flinn will have direct general management responsibility for all operations of the company and its manufacturing and sales divisions. He joined the company in 1953 as controller, was elected treasurer in 1954, and became a director in 1958.

Elected to the posts of vice president for finance, and secretary, is William S. Brewer. He was elected a director in 1949, a vice president in 1954, and has been purchasing agent for many years.

John F. Dwyer was re-elected to the post of vice president. He joined the company in 1925, became division manager of the Cortland Carriage Goods Div. in 1930, a post he still holds.

Re-elected to his position of vice president for sales is Frederic A. Celler.

Iceberg In Virginia?

Locker Plant Suspends Operation as Giant Ice Lump Threatens Ammonia Tubing

MADISON, Va.—There was plenty of ice at Madison Frozen Foods, Inc., but in the wrong place.

The locker plant was forced to suspend its frozen food storage service and move out its frozen food because a giant lump of ice had formed beneath the storage room and was buckling the floor.

"The danger for the food was that a refrigeration coil might break and scatter ammonia over it," explained Jerome Cornwell, manager of the plant.

"Our refrigeration coils in the ceiling of the storage room are supported by steel uprights and as the floor rises, the increased pressure of the uprights against the coils bends and twists them and may cause one to break," he said.

The swiftly growing iceberg—which could be removed only after the floor was taken up—resulted from a break in the vapor seal, a thickness of paper and asphalt below the floor which normally prevents the cold air—-5°—of the storage room from escaping.

When that happens, as it did when the vapor seal cracked, the cold air combines with the warmer, outside air, condenses and freezes.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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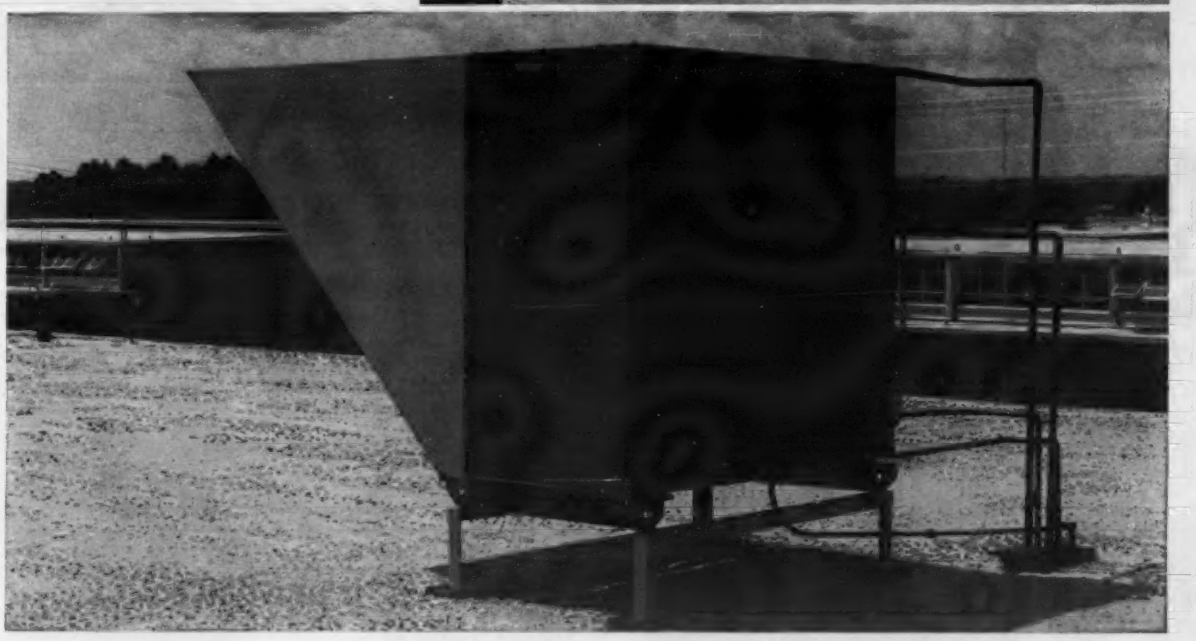

BFC-16 on guard—one of more than 50 Larkin Zephyrcon Air-cooled Condensers at the Georgia State Farmers Market. A full range of both FCs and BFCs are used, many with multiple circuits.

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- Slow speed motor on FC model is permanently lubricated, has overload protection, and is mounted on resilient base.
- Casing is of heavy-gauge steel.
- Unit finished with baked-on epon-base primer and melamine top coat for maximum protection.
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Keying Production To Requested Delivery Dates

New Methods Plus Production Programming Bring Planned-For Results In New Copeland Plant

SIDNEY, Ohio—In full production activitiy for not much more than a year, the new Copeland Refrigeration Corp. plant here has achieved its primary goals of delivering better-quality products on improved delivery schedules for its customers, and at the same time has boosted the productivity rate per employe, Copeland officials declare.

This has been accomplished while the over-all production methods were being changed from what was virtually all hand assembly on roller conveyors, to a semi-automated system with overhead conveyors carrying the work through most of the major assembly operations.

While new production machinery and new production methods were contributing factors to achieving the above-mentioned goals, Ben Moreland, vice president in charge of manufacturing, believes that most of the credit belongs to a program of coordinated planning between the production, engineering, and marketing staffs of the corporation.

The relation of the production effort to a better service to the customer comes about through the manufacturing and delivering a widely varied line of refrigeration compressors and condensing units on a schedule of a minimum of two weeks delivery to the customer, with complete assurance that each model will have the design characteristics specified, have undergone checking and testing, and this is to be done on a semi-automated assembly line with no warehousing of the completed product.

Production Planning, Flexibility Vital

To accomplish this with a catalogued line of 75 compressor models (which balloons up to several hundred different types of models with changes in electrical characteristics and various accessories), it is obvious that production planning, and production line flexibility are the keys to solving the problem. Despite the complexity of scheduling production, and the increased number of quality checks during assembly, a vast improvement has been achieved in shortening delivery dates.

No Warehouse Facilities Needed

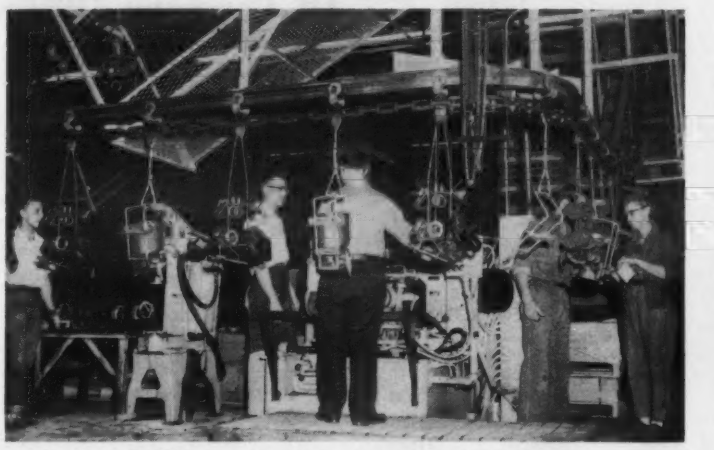
Copeland compressors are produced to customers' orders. As a general rule, no inventories of compressors to fill orders are produced. A certain number are built to go into the service reserve bank. Completed orders go to staging areas (adjacent to the loading docks) and the compressors in the service reserve are also kept in this same area. No warehouse facilities are necessary.

Moreland knows exactly the number of compressors he can put through the semi-automated lines in an 8-hour shift and it is determined by the time which it takes the compressors to move through the drying oven.

3 Basic Types of Compressors Produced

There are three basic types of compressors which are produced on the conveyorized assembly lines. These are (1) small "Copelametics" with cast iron housings in sizes up to 1½ hp.; larger "Copelametics" in sizes over 1½ hp.; and the welded-type hermetically sealed compressor with a stamped housing, in sizes from ½ to 4 hp.

Three overhead monorail conveyors carry machined parts and other components to assembly areas. Three carousel-type assembly lines have been so designed that flexibility can be provided in the numbers of the types of compressors put through each shift—for example, the carousel stations set up primarily for the smaller "Copelametics" can also handle the larger "Copelametics" and the

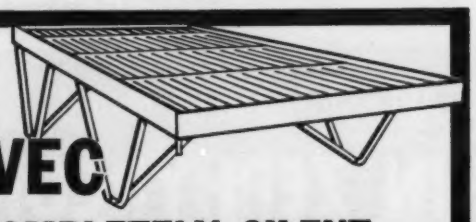


SOME MAIN ELEMENTS in Copeland's semi-automated refrigeration compressor assembly lines are shown in the picture. Compressor housings, traveling on overhead conveyor, are accompanied in each instance by following "Christmas tree fixture" carrying related parts for the compressor assembly. At this particular point, compressor housing is removed and motor stator is installed, with a heat induction machine used to insure proper fit. At far right woman employe is carrying out a vital role in the planned production program—she attaches an "identification card" which through coded numbers indicates the exact model (of several hundred in the Copeland line) that this particular assembly shall be. This guides the people working at the other stations ahead on the assembly line. Card is also marked with small "boxes" which are punched to indicate checks made for quality control at various points.

SMALL PARTS for compressor assembly are brought together at single area where women employes check and fit rods, shafts, and pistons, which are then placed on tables. As compressor housings swing by on overhead conveyor, an empty carrier immediately behind them is hung with the small parts. Employes recognize the type of compressor housing by sight, or can identify it by model number stamped on it, to relate proper parts to go along with it.

MODERNIZED MACHINE SHOP operations prepare all Copeland compressor parts for final assembly. Here new machines turn out aluminum connecting rods with an elongated bore which is designed to prevent cracking or metal fatigue during periods of special stress, such as compressor start-up under heavy load.

COMPRESSOR TESTING on the assembly line is done in a special room. As units move through on conveyor, samples of each run are taken off for a full calorimeter test (at left) or flow rating test (at right). Occasionally an entire run of certain models will be tested, to check quality control.



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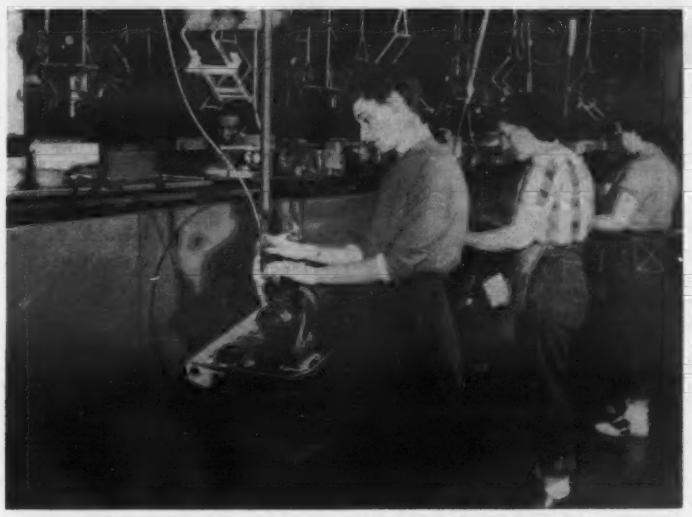

"CAROUSEL" ASSEMBLY stations are key factor in assembly line production of Copeland compressors. Compressor housing is removed from overhead carrier and clamped to carousel platen, which indexes either clockwise or counterclockwise at various stations for assembly of various parts from following hangers, which move along carousel line at synchronized speed.

ones for the small welded hermetics can also handle the small "Copelametics."

In planning for actual production, on the basis of forecast information received from the sales and marketing department, the production planning staff determines operating levels of the various assembly lines. A "dead load" is maintained on a production planning chart showing orders on hand for delivery during a particular week.

Machine Shop Maintains 15-Day Lead Time

A 15-day lead time is maintained in the machine shop by forecast against anticipated orders to be produced, and this sets in motion the initial step, which is the program for "rough" machining of the castings.

These castings are subjected to some preliminary machining, since four or five different models can be produced from one compressor casting, and after this very first process they go into an "intermediate bank" from which they are taken for final machining, as required by actual firm orders in the "dead load."

On the prior Tuesday of the week in which production will actually take place, the production planning staff creates the "live load" for the assembly lines, in terms of the specific order from a customer that will be filled in a specific run on the assembly line.

The machined compressor housing, ready for final assembly, is taken to the start of the conveyor line, where other components are stockpiled. Housings are hung on special "Christmas tree" carriers on one of the three conveyors.

Next, experienced workers, identifying the compressor model either by recognition or by reading the model number stamped into each compressor, hang related components — piston and rod assemblies, crankshafts, stator covers, thrust bearing plates, terminal blocks, and other components— on a second carrier next to the housing. Thus, both the housing and the related component are subjected to a minimum of handling during the assembly operation.

Cleansing Operation

Conveyor lines then take these parts through a two-stage Mahon pressure washer, where nozzles at the entrance spray cleaning solution, and other nozzles rinse the parts under pressure. To assure thorough washing, conveyor carriers were designed to hold compressor castings so that interior surfaces were thoroughly sprayed. The housing hangs upside down with the cylinder bores in a horizontal position for washing.

Actual Assembly Area

Following the cleansing operation, a precision-ground and lubricated valve plate is added to each parts carrier. Next stop is the start of the actual assembly area, where the compressor housing is removed and a stator subassembly is inserted by one of two methods. One method uses air presses to press the stator into positions, the other (used mainly on smaller compressors) employs a Tocco induction heater to shrink fit the housing around the stator.

NO WAREHOUSING OF compressors as such is needed with planned production program. Compressors are built to order, completed within prescribed date-of-shipment limits, and after crating or packaging are moved directly to "staging" area from which shipments are made. Certain areas are marked off for major customers, or principal trucking lines.

It is at this stator assembly area that the exact model of the compressor to be produced is determined. From a daily production planning sheet an "identity card" is attached to each compressor. Through coded numbers it indicates the characteristics of the model to be produced, including any special accessories and ties the particular compressor right to a customer order number. From this point on, no modifications can be made in the specifications of the compressor as established on the card.

This identification card also has a series of spaces for quality control "checks" throughout the assembly, and these spaces must be punched with a card puncher to indicate that the checks have been made. Moreland is working on an imporvement of this method, in which he hopes to make use of an aluminum foil strip which can be notched or indented, and then placed under the nameplate, along with the date stamp, to provide a permanent record of the quality control checks and tests made on each compressor.

From the stator assembly points the compressors are returned to the conveyor carrier, and with the matching parts, move to one of the three assembly carousels, which are perhaps the most unusual and dramatic part of the assembly operation.

Two of the carousels are 112 ft. long, contain 28 trunion type, chain-driven fixtures. The third carousel is 88 ft. long, has 24 fixtures. Flexibility to permit assembly of a variety of models, or to permit loading of two lines with one type of model, as mentioned previously, is made possible by setting common locating points within each of the three groups of compressors. Also, work-holding platens on the carousel fixtures are provided with additional mounting hole positions to accommodate the variations.

Conveyors and carousels have a common drive unit which synchronizes part delivery to assembly fixture movement, with synchronization accomplished by a shaft and sprocket arrangement. Carousel fixtures operate on rollers and stationary cams. They can be indexed 360° on a horizontal axis, either clockwise or counterclockwise, 90° at a time.

The indexing is so worked out that the surface to be worked on is always "up" (directly fac-

(Continued on next page)

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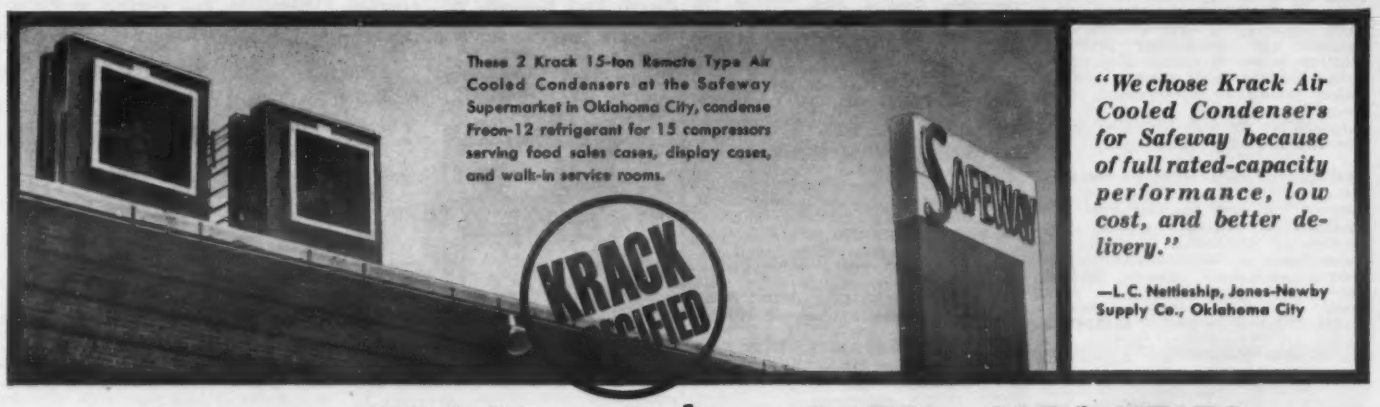
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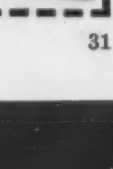

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STORE MANAGER, for air conditioning & refrigeration wholesaler in Ohio. Must be qualified to supervise personnel, direct inside sales, and be capable of taking over purchasing. Real opportunity for right man. Our employees know of this ad. Mail complete resume, with snapshot to: BOX A6509, Air Conditioning, Heating & Refrigeration News.

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LABORATORY TECHNICIAN required to set up and run code tests of heating and refrigeration equipment. Excellent opportunity with leading manufacturer located in the Southeastern states now expanding its test facilities. Write giving technical background, experience, and salary desired. BOX A6512, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

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ONE 60 ton York air conditioning system, complete with York compressor and evaporative condenser, with Allen-Bradley two speed compressor motor controller. Cooling coils, blower fan and heating coil with American-Standard hot water furnace. 1,440,000 BTU input. This equipment at present is in a closed theater. About 7 years old. Contact HALE & BROWNING CONTRACTORS, Box 514, Logan, W. Va.

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Keying Production to Requests--

(Continued from preceding page)

ing the worker). Assembly operations are accomplished manually and with the use of portable air tools.

When the trip through the carousel stations has been completed, the compressor is unclamped and transfered to an overhead monorail conveyor by a hoist. Stator cover and the bottom cover are not assembled on the carousels so that complete drying of the compressor can be accomplished. Both covers are hung on the conveyor with the assembly and go through the drying oven with it.

If the production run is short, because of rejects, the order is filled from the service reserve bank. If the run is over the established mark, the extra models go into the service reserve.

2-Stage Drying System Minimizing Handling

In the drying oven built by the R. C. Mahon Co., the compressor assembly passes through a two-stage drying system in 6½ hours. In the first one-third of the passage the assemblies are pre-heated and stabilized, then high heated up to 300° F. for the remainder of the way. Intake air is dehumidified to maintain a dewpoint maximum of 30° F.

This method of dehydration has reduced to practically zero the amount of handling required in the drying process in addition to saving time and assuring an "even" quality in drying for all units. Formerly compressors were wheeled into an oven, tubes were attached to each compressor, and air was forced through each tube while the units were baked dry for eight hours or longer.

Now, dry air is blown only through the hermetically sealed welded units, immediately following the welding operations, and this is done without interference with the rest of the dehydration process.

Following dehydration, the compressors continue on the conveyors to an air conditioned assembly area, where the bottom plate and stator cover are installed. The hermetically sealed models are removed and top and bottom sections are seam welded. Tube openings are sealed and the hermetic unit is then returned to the conveyors.

"Copelametic" models go to torquing stations, where bolts loosened in the oven heat are tightened. Compressors are then charged with dry air for a pressure leak test in water.

Following this, compressors to be painted the standard black move through a flow-coating booth, and then through infrared drying ovens. Compressors requiring other colors bypass the flow-coat booth on another conveyor, and then return to the main conveyor after painting. Then, in the final assembly step, terminals, overload relays, and other accessories are installed.

Completed Compressors Go To Oil Charging Station

The completed compressor assemblies then go to an oil charging station where they are charged with a specified amount of refrigeration oil, which has been pumped from tank cars through a degasifier, assuring quality and dryness of the oil.

Following testing, the compressors then move to the staging area to be prepared for shipment. Here again, the identification tag is utilized to accumulate the compressors on the various customer orders. To facilitate shipment and to meet shipping schedules, dock loading areas are marked off by numbers designated either for major customers (who may send their own trucks) or by the principal trucking lines.

What about quality control? In this continuous conveyor type of production, is it practical and possible to make quality tests as the compressors move steadily through the assembly procedure?

"Each compressor must clear through a series of checking points during the assembly operation, and the completion of each of these checks is indicated by punches on the identification card, which has been previously described," Moreland points out.

Maximum Amount of Checking Done on Entering End of Line

"However, our program of checking is geared primarily to doing the maximum amount of checking on the entering end of the process, rather than the leaving end."

For example, rough castings are checked on an audit basis. All machined compressor housings are inspected at the end of the machine line. Plans are being made for the installation of a "porcupine" inspecting machine for the bodies.

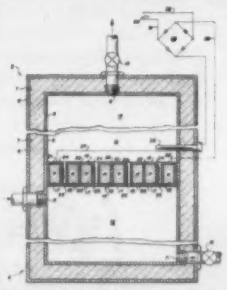
Piston fits are held within specified tolerances by gauge checks. Various parts for the compressor assembly are inspected on a percentage basis before they get into the assembly area.

After routine inspection checks and tests, samples of every production run are taken by Quality Control to undergo complete calorimeter and flow-rating tests under full load conditions.

PATENTS *Week of November 3*

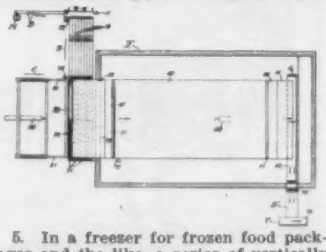
Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

2,910,836. FLUID HEATING AND COOLING APPARATUS. Sebastian Karrer, Port Republic, Md., assignor, by mesne assignments to Minnesota Mining & Mfg. Co., St. Paul, Minn.



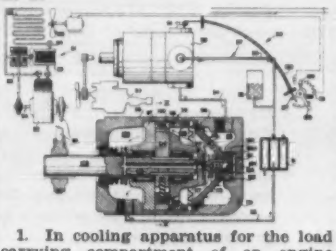
6. In combination, a liquid tight enclosure, a liquid medium filling said enclosure and means for affording a substantial temperature gradient between spaced portions of said liquid medium within said enclosure, said means comprising a thermoelectric heat pump having a heat absorbing thermojunction for extracting heat. . . .

2,910,837. CONTINUOUS PACKAGED FOOD FREEZER. Velt C. Patterson, Philadelphia, Pa., assignor to Patterson Freezer Corp., Philadelphia, Pa.



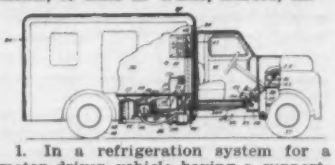
5. In a freezer for frozen food packages and the like, a series of vertically spaced substantially horizontal freezing plates arranged in pairs, each pair adapted to receive therebetween a series of aligned food packages disposed in successively abutting relation, means to refrigerate said plates, said plates of each pair being mounted for reciprocatory movement to one another. . . .

2,910,839. HYDRAULIC TRANSMISSION AND CONTROL MECHANISM FOR AIR CONDITIONING SYSTEM. Cecil E. Adams, Columbus, Ohio, assignor, by mesne assignments, to American Brake Shoe Co., New York, N. Y.



1. In cooling apparatus for the load carrying compartment of an engine driven vehicle, such apparatus being of the type having a compressor and evaporator, a variable volume fluid pump connected for operation by the vehicle engine; a fluid motor in driving relationship with said compressor and receiving fluid from said pump; means for varying the volume of said pump to govern the rate of operation of said motor and compressor; and valve means responsive to the volume of fluid being delivered to said motor and operative to by-pass said fluid to exhaust when the volume of fluid is reduced to a predetermined quantity.

2,910,940. MOTOR-DRIVEN VEHICLES WITH REFRIGERATING APPARATUS. Eldon F. Miller, Dunham Woods, Ill., assignor, by mesne assignments, to Effie E. White, Aurora, Ill.



1. In a refrigeration system for a motor driven vehicle having a supporting frame on which there are operatively mounted an internal combustion engine provided with an intake manifold, a transmission including a shaft extending longitudinally of the frame, and means defining a refrigeration chamber, said refrigeration system being of the compressor-condenser-evaporator type and including a compressor crank, a condenser fan and an evaporator fan. . . .

(To Be Continued)

REFRIGERATION SALES ENGINEER

Multi-plant, Triple A National Manufacturer of refrigeration components has challenging Sales Engineering position. Will contact O.E.M. manufacturers to develop new products in liaison with our manufacturing personnel. Salary, expenses and profit-sharing plan. Send resume to BOX A6493, Air Conditioning, Heating & Refrigeration News.

Service Diagnosis for a Complex System

Part 3

The complex air conditioning system designed to provide conditions vital in the test launching of the Titan Intercontinental Ballistic Missile was described in the May 25, 1959 issue of the NEWS.

Because of its important function, an operations manual was prepared giving explicit instructions on its operation and maintenance. Since proper diagnosis of service problems is so important in this system, the NEWS believes the "Trouble Diagnosis" Chart for the system will be of interest and assistance to all those who service any type of air conditioning system. This is Part 3 of the series.

For a better understanding of the "Trouble Diagnosis Chart," a brief description of the system will be useful.

The system is designed to dehumidify the air by cooling it to -10° F. or 40° F. as required, using mechanical refrigeration. The air is then reheated to 40° F. for use for cooling or heated to 120° F. for use in heating when the ambient temperature is below 40° F.

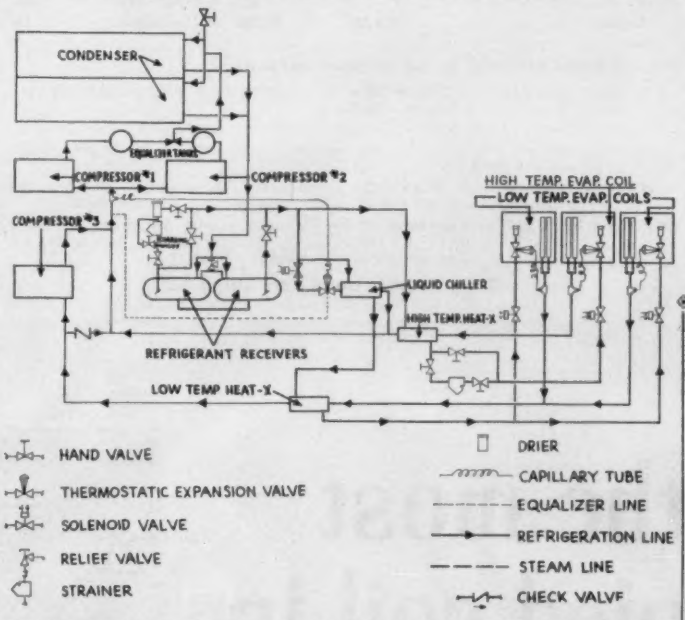
Flow of air is automatically controlled at 180 lbs./min. of recirculated air plus 70 lbs./min. of fresh air. A manual adjustment located on the instrument panel permits pre-selection of any other proportion of air.

Cooling effect is supplied by a two-stage refrigerant system, composed of one 12-cylinder low-stage compressor, directly connected to a 50-hp. motor, and two 8-cylinder high temperature compressors each directly connected to a 60-hp. electric motor.

Other parts of the assembly include a 12-ton liquid cooler, a two-section air-cooled condenser mounting four 47-in. 4-blade propeller fans belted to two 10-hp. electric motors.

Prime air mover is a 60-hp. direct-drive positive-pressure blower selected to move 250 lbs. of air/min. against a 40-in. water external static pressure.

The coil section includes a cooling evaporator section containing two 16-row low temperature coils and one 12-row high temperature coil together with an air diverter valve, three expansion valves, and a two-row steam heat and reheat coil. Heat is supplied by an electrically fired steam generator designed to heat 175 lbs. air/min. from -20° F. to 120° F.



COOLING CYCLE CIRCUIT and valving for the complex air conditioning system used for test launchings of "Titan" missile is shown in the above drawing.

SYSTEM NOISES *(Concluded)*

Observation	Possible Cause	Remedy
j. Pipe Rattle	Inadequately supported piping or loose pipe connections	**Support pipes or check pipe connections**
	No muffler in discharge line or improperly located	**Install or move muffler closer to compressor**
k. Hissing	Insufficient refrigerant flow through expansion valves	**Add refrigerant**
	Clogged liquid line strainer	**Clean**

UNLOADER TROUBLES

Observation	Possible Cause	Remedy
m. Compressor will not unload	Capacity control valve inoperative	**Repair**
	Unloader element stuck	**Repair**
	Hydraulic relay stuck	**Replace control cover assembly**
	Plugged pressure line to power element	**Clean out line**
	External adjusting stem damaged	**Replace**
n. Compressor will not load	Low oil pressure (below 45 p.s.i. net)	**See item (s)**
	Capacity control valve stuck open	**Repair or replace**
	Unloader element stuck	**Repair**
	Broken pressure line to power element	**Repair**
	Plugged pressure line to power element	**Clean out**

UNLOADER TROUBLES *(Concluded)*

Observation	Possible Cause	Remedy
	External adjusting stem damaged	**Replace**
	Control oil strainer blocked	**Clean or replace**
	Bellows of control valve	**Remove thread protector and leak test. Replace valve body if bellows leak**
	Pipe plug installed in pneumatic connection	**REMOVE—This connection must be free to breathe**
	Foaming in crankcase due to oil dilution	**Examine expansion valve and piping for cause of flooding**
	Hydraulic relay stuck	**Replace control cover assembly**
p. Rapid unloader cycling	Oversized expansion valve causing excessive fluctuation in suction pressure	**Re-size expansion valve**
	Partially plugged control oil strainer	**Clean or replace**

(To Be Continued)

Peerless Pump To Operate Under Hydrodynamics Name

SAN JOSE, Calif.—Food Machinery & Chemical Corp. announced that its Peerless Pump Div., with headquarters in Los Angeles, and seven associated operations in pump manufacturing and allied fields would operate under the new organizational name: Hydrodynamics Div.

Gerald F. Twist, FMC vice president in charge of Hydrodynamics Div., said the new name was adopted to provide a higher degree of recognition in identifying the various manufacturing and marketing groups comprising the former Peerless Pump Div.

Under the new divisional name, individual operations will retain their separate identity through product line designations such as: Peerless Pump, Chicago Pump, Coffin Turbo Pump, Mechanical Foundries, Sonith Foundries, Laval Underground Surveys, Varley-FMC Limited (England), and Peerless-Tisa, S. A. (Mexico).

ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

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ARI Unitary Air Conditioning Sales Figures Up 49% for 1959

ARI UNITARY AIR-CONDITIONER SECTION'S CONDENSED SUMMARY BY SIZE OF MANUFACTURERS' SHIPMENTS FOURTH QUARTER (October-December, 1959)

Size	—By Condenser Type— Air or Evaporatively Cooled	Water Cooled	Total Units	% Change from 1958
Under 27,000 B.t.u./hr.	8,527	51	8,578	+ 52
27,000-32,999 B.t.u./hr.	3,651	....	3,651	+ 5
33,000-41,999 B.t.u./hr.	17,538	1,556	19,094	+ 96
42,000-53,999 B.t.u./hr.	4,980	37	5,017	+103
54,000-64,999 B.t.u./hr.	5,049	2,164	7,213	+ 51
65,000-96,999 B.t.u./hr.	2,512	1,263	3,775	+ 32
97,000-134,999 B.t.u./hr.	1,125	1,124	2,249	+ 34
135,000-184,999 B.t.u./hr.	213	480	693	0
185,000-249,999 B.t.u./hr.	170	383	553	+ 47
250,000-319,999 B.t.u./hr.	41	312	353	+ 14
320,000-379,999 B.t.u./hr.	25	222	247	+123
380,000 B.t.u./hr. & over	13	55	68	+ 31
Total	**43,844**	**7,647**	**51,491**	**+ 60**

* * *

Reporting Companies: Airtemp Div., Chrysler Corp.; Amana Refrigeration, Inc.; American Furnace Co.; American-Standard Air Conditioning Div.; American-Standard Industrial Div.; Arkla Air Conditioning Corp.; Armstrong Furnace Co.; Carrier Corp. (incl. all mfg. div.); Cleveland Steel Products Corp.; Cobell Industries, Inc. (beg. with July); Coleman Co., Inc., The; Columbia Specialty Co., Inc.; Continental Mfg. Co.; Coolerator Div., McGraw-Edison Co.; Curtis Mfg. Co.

Fedders Corp.; Florida Warren Corp.; Forston Co.; Fraser & Johnston Co. (beg. with May); Frick Co., Inc.; Friedrich Refrigerator, Inc.; Frigidaire Div., General Motors Corp.; Gaffers & Sattler Div., Utility Appliance Corp.; General Electric Co.; Grove Furnace Co., Inc.; Hall-Neal Furnace Co.; Heat-X, Inc. (beg. with August); Heil-Quaker Corp.; Holly-General Co.; Hupp Corp.; Gibson Refrigerator Div. (January-March); Perfection Div.; Typhoon Air Conditioning Div.; Typhoon Heat Pump Div.

International Heater Co.; Iron Fireman Mfg. Co.; Janitrol Heating & Air Conditioning Div.; Lennox Industries, Inc.; Majestic Co., Inc., The; Mathes Co., The (beg. with April); Miami Products, Inc.; Mueller Climatrol Div. of Worthington Corp.; National Thermatic Corp. (beg. with April); National-U. S. Radiator Corp.; Olsen Mfg. Co., The C. A.; Peerless Corp.; Philco Corp.; Rheem Mfg. Co.

Smith Corp., The A. O.; Southwest Mfg. Co.; Stewart-Warner Corp., U. S. Machine Div.; Thatcher Furnace Co.; Therm-Air Mfg. Co. (beg. with June); Trane Co., The; Tuck-aire Furnace Co.; United States Air Conditioning Corp.; Westinghouse Electric Corp.; Whirlpool Corp.; Williamson Co.; Worthington Corp.; York Div. of Borg-Warner Corp.

JANUARY-DECEMBER, 1959 (12 months)

Size	—By Condenser Type— Air or Evaporatively Cooled	Water Cooled	Total Units	% Change from 1958
Under 27,000 B.t.u./hr.	45,477	729	46,206	+ 49
27,000-32,999 B.t.u./hr.	20,965	436	21,401	+ 22
33,000-41,999 B.t.u./hr.	88,348	12,192	100,540	+ 62
42,000-53,999 B.t.u./hr.	27,196	603	27,799	+114
54,000-64,999 B.t.u./hr.	30,205	14,289	44,494	+ 34
65,000-96,999 B.t.u./hr.	13,968	8,181	22,149	+ 31
97,000-134,999 B.t.u./hr.	5,790	6,913	12,703	+ 31
135,000-184,999 B.t.u./hr.	1,125	3,740	4,865	+ 16
185,000-249,999 B.t.u./hr.	760	1,900	2,660	+ 13
250,000-319,999 B.t.u./hr.	153	1,499	1,652	+ 22
320,000-379,999 B.t.u./hr.	137	1,014	1,149	+ 90
380,000 B.t.u./hr. & over	78	237	317	+ 64
Total	**234,202**	**51,733**	**285,935**	**+ 49**

This condensed summary by size includes shipments of:

1. Air conditioners (except window and wall types)—with or without condensers and refrigeration chassis.
2. Year-round air conditioners—with or without condensers.
3. Heat pumps (except room air conditioners)—self-contained and other than self-contained.
4. Split systems—air conditioning condensing units **only**. It does **not** include shipments of air conditioning coils with or without blowers.

EXPORT SHIPMENTS—The total figure includes export shipments of 2,051 units for the fourth quarter and 7,993 units for January-December, 1959.

(See Story on Page One)

Wilcolator Names Raymond H. Matthews As Chief Engineer

ELIZABETH, N. J. — The Wilcolator Co. here, manufacturer of thermostatic controls, has announced the appointment of Raymond H. Matthews as chief engineer.

Matthews

Matthews is a graduate of Worcester Polytechnic Institute and prior to joining Wilcolator, served as assistant manager of engineering at G-V Controls, Inc., Livingston, N. J. Prior to this, he spent six years as chief engineer with Fenwal, Inc., and four years as an application engineer for W. M. Chace Co., according to the announcement.

Carrier Strike--

(Continued from Page 1, Col. 2)

handling products shipped in interstate commerce, and also interfered with salaried employes who are reporting to work regularly. If the NLRB finds the charges are justified, it could petition a U. S. court for an injunction against the mass picketing operation.

In asking for a return-to-work vote, Carrier officials declared that they are convinced that a majority of employes want to return to work, and they also state that before a recent election certifying the United Steel Workers as the bargaining agent, the union promised that no strikes would be called without a vote being taken.

Brown Named Manager Of Tempromatic Corp.

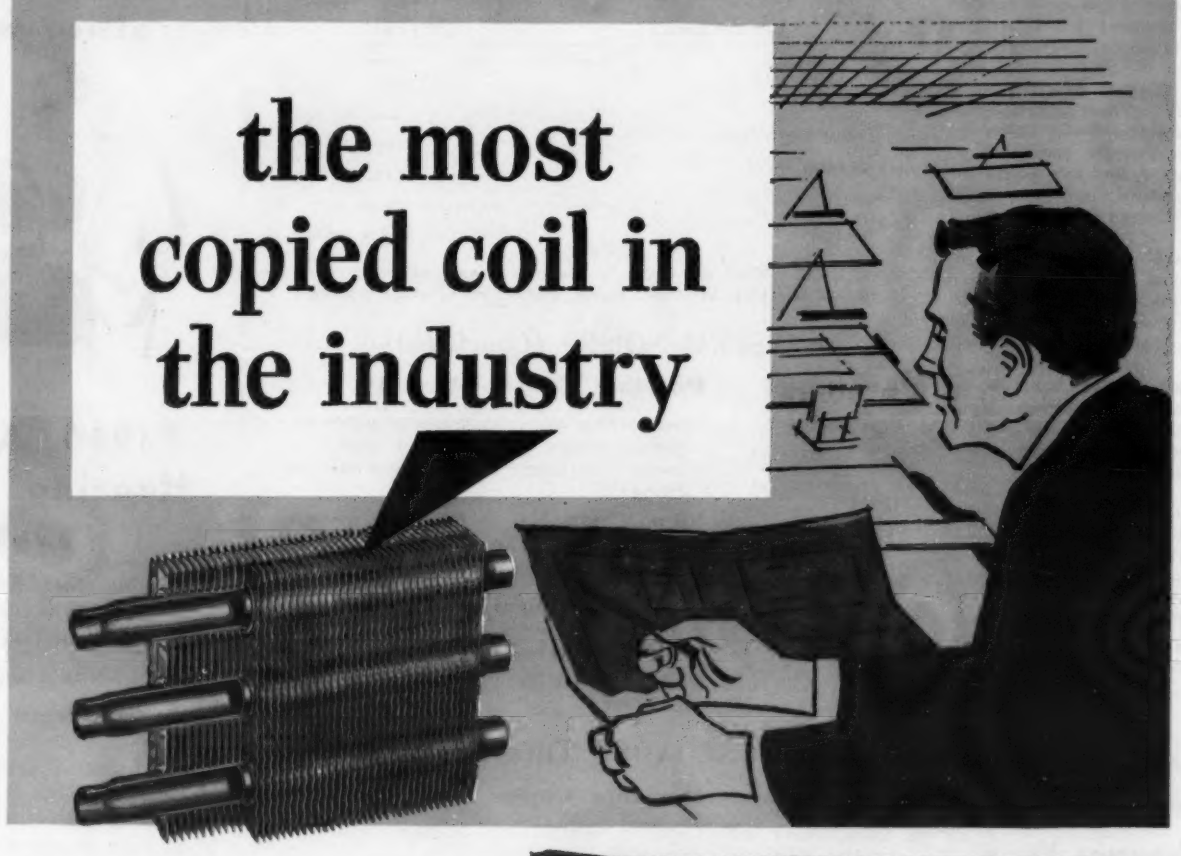
DE LAND, Fla. — Appointment of Burl C. Brown as general manager of the recently-formed Tempromatic Corp. here has been announced by Robert C. Dukes, executive vice president.

Brown formerly was manager of air conditioning engineering for National-U. S. Radiator Corp.

The firm expects to be in production soon with a line of packaged heat pumps and air conditioners.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

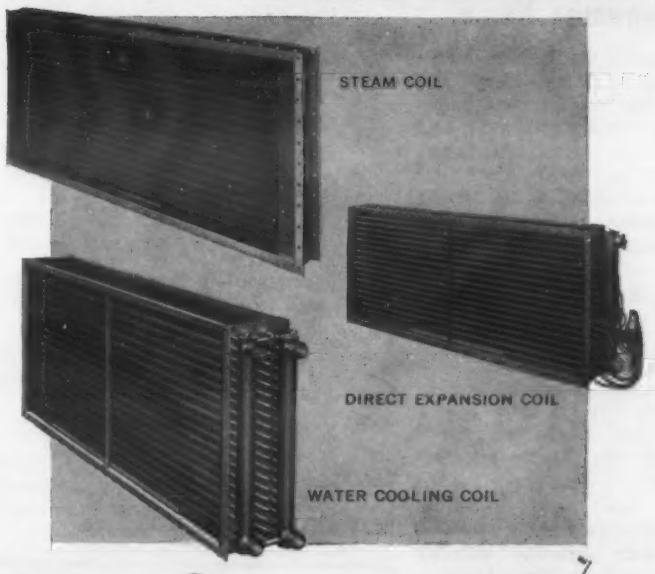
the most copied coil in the industry



Over the years, McQuay coils have stood the important test of time, and have justly earned their reputation for quality and performance. No wonder, then, that they are the most copied coils in the industry.

McQuay was the first to produce a permanent fin-to-tube bond without the use of solder. McQuay was first with Ripple-Fins, first to combine Ripple-Fins and staggered tube construction for maximum heat transfer, greater strength and rigidity. McQuay, also, was first to add full fin collars to its Ripple-Fin construction for accurate fin spacing and maximum heat transfer.

McQuay coils are available in the widest possible range of styles and capacities and are available for steam, hot water, chilled water, direct expansion, refrigerant condensing and all types of brine. For any coil requirement, call your McQuay representative, or write McQuay, Inc., 1607 Broadway Street N. E., Minneapolis 13, Minnesota.



Tube diameters 5/8"—1/2"—3/8"
One to 12 rows deep—One to 15 fins per inch

McQuay Means Quality

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AIR CONDITIONING • HEATING • REFRIGERATION